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TREATMENT
FOR 1894.



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The **Litholydium** has to be taken three times daily, at 9 a.m., 3 p.m., 9 p.m., each time a teaspoonful, dissolved in a wineglassful of lukewarm water, one hour before, or two hours after meals.

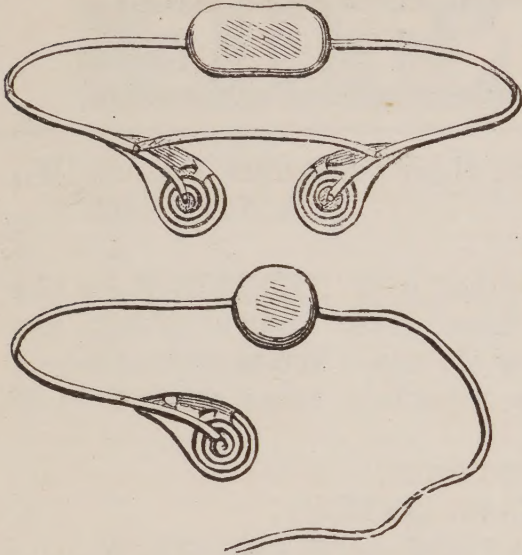
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CHEMISTS BY APPOINTMENT TO HER MAJESTY THE QUEEN.

SOLUBLE "TABLOIDS" OF COMPRESSED DRUGS.

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THEIR SMALL BULK.—Each dose of the drug is presented in the smallest possible compass, a matter worthy of consideration by the travelling practitioner.

THEIR READY SOLUBILITY.—Being compressed from dry powders, instead of containing a gummy pill excipient, "Tabloids" are to a certain degree porous, and when required for constitutional effect are compressed lightly, so that they may disintegrate in the stomach and dissolve readily.

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Aconite Tinct., 1 and 5 min.

Agathin, 4 gr.

Aloin, 1-10 gr.

*Aloin, Compound—(Anti-Con-

stipation).

Alummol, 4 gr.

Ammon. Bromide, 5 and 10 gr.

Ammon. Chloride, 3, 5, and 10 gr.

Ammon. Chloride with Borax.

Antacid. (Magnesio-Calcic).

Antifebrin, 2 gr.

Antim. Tartrate, 1-50 gr.

*Antipyrin, 2½ gr.

Antipyrin, 5 gr.

Apomorphine Mur., 1-50 gr.

Arsenious Acid, 1-100, 1-50, and

1-20 gr.

Atropa Sulph. 1-100 gr.

Belladonna Tinct., 1, 5, & 15 min.

Benzosol, 5 gr.

Bismuth Subnitrate, 5 and 10 gr.

Bismuth and Soda, 2½ gr. each.

*Blaud's Pill, 4 gr.

Blaud's Pill with Aloin.

Blaud's Pill with Arsenic.

Blue Pill, 3 gr.

Borax, 5 gr.

Caffein Citrate, 2 gr.

*Calcium Sulph., 1-10 gr.

Calomel, 1-10, ½, and 1 gr.

Camphor, Comp. Tinct. (Pare-

goric), 2, 5, and 15 min.

Cannabis Indica Tinct., 5 min.

Capsicum Tinct., 1 min.

*Cascara Sagrada, Ext., 2 gr.

*Cascara Comp.

*Cathartic Comp., U.S.P.

Charcoal (Pure Willow), 5 gr.

Chloral-amid, 5 gr.

Chloral Hydrate, 5 and 10 gr.

Cinch. Co. Tr., 30 min.

Cinch. Simp. Tr., 30 min.

Cocaine Mur., 1 gr.

Cocaine with Potash and Borax.

Copper Arsenite, 1-1,000 gr.

Creta Aromat cum Opio Pulv.,

5 gr. (Aromatic Confection

with Opium).

Cubeb & Belladonna, Efferves.

(Dr. L. Moore).

Cubeb., Comp.

Dermatol, 5 gr.

Dialysed Iron, 10 min.

Digitalis Tinc., 1 and 5 min.

Digitalin, 1-100 gr.

Diuretin—"Knoll," 5 gr.

*Easton's Syrup.

*Ergotin, 3 gr.

Eucalyptin Resin, 1-8 gr.

Exalgin, 2 gr.

Ferri Sulph. Exsic.

Gelsem. Semp. Tr., 5 min.

Guaiacum and Sulphur, aa 3 gr.

Hydrarg. Colocynth., et Hyos.

Hydrarg. cum Creta, ½, ¼, & 1 gr.

Hydrarg. cum Creta, 1 gr.; with

Dover Powder, 1 gr.

Hydrarg. Iod. Rub., 1-16 gr.

Hydrarg. Iod. Vir. 1-8 gr.

Hydrarg. Perchlor., 1-100 gr.

Hydrarg. Subchlor., 1-10 gr.

*Hydrastis Comp.

Hydronaphthol, 3 gr.

Hypocyan. Tr., 1 and 10 mins.

Hypnal, 5 gr.

Ichthyol, 2½ gr.

Iodic Hydrarg., ½ gr.

Iodopyrin, 5 gr.

Ipecac. and Opium, ¼ and 5 gr.

Ipecac. Powder, 1-10 and 5 gr.

Ipecac. Pulv. cum Antim. Tart.,

aa 1-100 gr.

Iron and Arsenic Comp.

*Iron and Quinine Cit., 3 gr.

*Laxative Vegetable.

Lithia Carbonate, 2 gr.

*Lithia Co. (Dr. Lane.)

Magnes. Carb. Comp. (antacid).

Manganese Dioxide, 2 gr.

Menthol Co.

Morphine Sulph., 1-20 and 1-8 gr.

Nasal (Dr. Seiler).

Nasal, Alkaline.

Nasal, Antiseptic and Alkaline.

Naso-pharyngeal (Dr. Mac-

naughton Jones).

Nitro-glycerine, 1-100 gr.

Nuxvomica Tinct., 1, 3, & 10 min.

Opium Tinct., 2, 5, and 10 mins.

Opium, ½ and 1 gr.

Pancreatin (see Zymine "Tab-

loids").

Papain, 2 gr. (Dr. Finkler & Co.).

*Pepsin (Fairchild).

Pepsin, Saccharated (Wyeth),

5 gr.

Pepsin, Bismuth, and Charcoal.

*Peptonic, 3 gr.

*Peptonic (new process).

Phenacetin (Bayer), 5 gr.

Pilocarpin Mur., 1-20 gr.

Podophyllin Resin, ¼ gr.

Podophyllin Co. (Sir W. Moore).

Potass. Bicar., 5 gr.

Potass. Bromide, 5 and 10 gr.

Potass. Chlorate, 5 gr.

Potass. Chlorate with Borax.

Potass. Iodide, 5 gr.

Potass. Nit. (Sal Prunella), 5 gr.

Potass. Permanganate, 1 & 2 gr.

Quinine Bisulphate, ½ gr.

*Quinine (Bisulph.), 1, 2, 3, & 5 gr.

Quinine Sulphate, same

strengths, sizes, and prices as

Quinine Bisulphate.

Reduced Iron, 2 gr.

Resorcin, 3 gr.

*Rhubarb Comp. (Pill), 3 gr.

Rhubarb Comp. Pulv. (Gregory

Powder), 5 gr.

Rhubarb and Gentian (Sto-

machic Comp.).

Rhubarb and Soda, 5 gr.

Rhubarb, 3 gr.

Saccharin, ½ gr.

Salicin, 5 gr.

Salol, 5 gr.

Santonin, ½ gr.

Sodium Bicarbonate, 5 gr.

Sodium Dithio-salicylate, 4 gr.

Soda-Mint, or Neutralising

"Tabloids."

Sodium Salicylate, 3 and 5 gr.

Sodium Sulphate Efferves.

Strophanthus (2 minims of

Tinct. in each).

Sulphonol, 5 gr.

Sulphur Comp. (Sir A. Garrod).

Tannin, 2½ gr.

Tar, 1 gr.

Tar, 1 gr., with Codeine, 1-8 gr.

Test "Tabloids" (for prep.

Thirst. [Fehling's Sol.].

Thyroid Gland, 5 gr.

Tinct. "Tabloids." In oval

bottles and bottles of 100.

*Tonic Comp.

Trinitrine (Nitro-glycerine)

1-100 and 1-50 gr.

Trinitrine and Amyl Nitrite.

Trinitrine Comp.

Urethane, 5 gr.

Vin. Ipecac., 5 min.

Voice.

Warburg Tincture, 30 min. in

Zinc Permanganate, 2 gr.

Zinc Sulphate, 1 and 10 gr.

Zinc Sulpho-carbolate, 2 gr.

Zingib. Fort. Tinc., 5 min.

+Zymine (Fairchild).

+Zymine Comp. (Fairchild).

* May be had Sugar-coated

+ May be had Keratin or Sugar-coated

OPHTHALMIC "TABLOIDS" AND THE OPHTHALMIC POCKET CASE.

(B., W. & Co.)

Ophthalmic "Tabloids" have recently been introduced to the notice of the

Medical Profession as a method of applying remedies to the eye which is free from the many objections to the use of solutions or gelatine discs. They are tiny bi-convex discs of the thickness of note-paper, very soluble, and contain each a definite quantity of alkaloid combined with an absolutely sterile and innocuous basis. With two exceptions they are intended to be inserted within the conjunctival sac as they are, and for the ready accomplishment of this without any discomfort to the patient we supply a simple and ingenious "Tabloid" holder, consisting of a small celluloid or vulcanite tube with an indiarubber ball attached to one end, the other end being concave and of such a size as to exactly fit a "Tabloid." The mode of using this holder requires no demonstration. The case contains



two camel-hair brushes, a medicine dropper, and a small glass mortar and pestle for rubbing down those "Tabloids" which are intended for use in solution. It measures only $2\frac{3}{4}$ by $1\frac{1}{4}$ by 1 inch.

Supplied, fitted complete, 7s. 6d. each.

We append a list of the Ophthalmic "Tabloids" already issued, to which we hope to make additions from time to time. In ordering or prescribing, it is sufficient to quote the distinguishing letter only—for instance, Ophthalmic "Tabloids" "A" (B., W. & Co.).

A	Atropia Sulph.	...	1/200 gr.	*J	Hydrarg. Perchlor.	...	1/1000 gr.
B	Atropia Sulph.	...	1/200 gr.	K	Pilocarpine	...	1/400 gr.
B	Cocaine	...	1/200 gr.	L	Tropacocaine Hydroch.	...	1/30 gr.
C	Cocaine	...	1/20 gr.	M	Pilocarpine	...	1/500 gr.
D	Atropia Sulph.	...	1/20 gr.	M	Cocaine	...	1/200 gr.
E	Homatrop Hydroch.	...	1/40 gr.	N	Homatrop Hydroch.	...	1/600 gr.
F	Eserine Salicyl.	...	1/600 gr.	O	Homatrop Hydroch.	...	1/240 gr.
G	Eserine Salicyl.	...	1/500 gr.	O	Cocaine	...	1/24 gr.
G	Tropacocaine Hydroch.	...	1/100 gr.	*P	Boracic Acid (Perfumed with Otto of Rose)	...	6 gr.
H	Homatrop Hydroch.	...	1/400 gr.				

* For use in solution.

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The Tabloid form of Compressed Drugs has fairly revolutionised the system of filling Medicine Chests and Cases, and is particularly well adapted to the equipment of cases intended for the pocket, or for a place in the carriage. The portability, completeness, practical character, and usefulness of these cases are admittedly points of real value in estimating their suitability as presents, especially to medical men whose practices are located in rural districts and extend over a wide area. We shall be happy to send our list, giving particulars and prices, on request.



No. 16A Case.
No. 16A (B., W. & Co.), containing 8 $\frac{1}{2}$ -oz. vials.

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HYPODERMIC "TABLOIDS"

(Prepared by BURROUGHS, WELLCOME & CO.).

SOLUBLE, PERMANENT, PORTABLE.

The growing importance of the Hypodermic method, the marvellous results obtained by it, the vast improvement in the instruments employed, and the perfection to which the Hypodermic "Tabloid" has been brought (to the utter displacement of unreliable and irritating solutions) are all matters of peculiar interest to the earnest practitioner. The alarming symptoms and the untoward physiological disturbances so frequently observed after the administration of ready-made and often partially decomposed solutions are altogether avoided when the injection is prepared from the Hypodermic "Tabloid." They are guaranteed to be absolutely accurate in dosage, do not alter, are really reliable, and can be thrown into solution in a few seconds.

LIST OF HYPODERMIC "TABLOIDS."

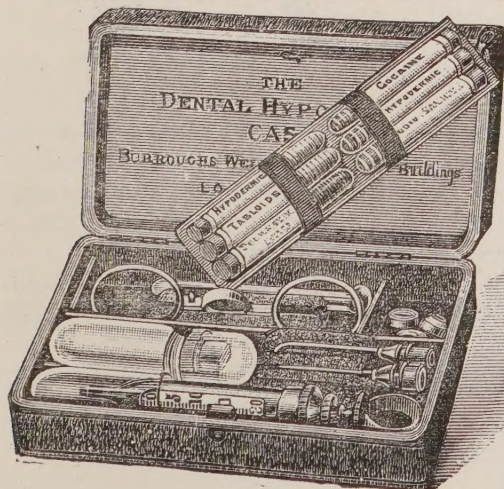


	No.		No.
Aconitine Nitrate Crystalline, 1-260 gr.	(36)	Morphine Sulphate, 1-12 gr.	(6)
Apomorphine Hydrochlorate, 1-10 gr.	(19)	Morphine Sulphate, $\frac{1}{8}$ gr.	(5)
Apomorphine Hydrochlorate, 1-15 gr.	(51)	Morphine Sulphate, $\frac{1}{6}$ gr.	(4)
Atropine Sulphate, 1-150 gr.	(15)	Morphine Sulphate, $\frac{1}{4}$ gr.	(3)
Atropine Sulphate, 1-100 gr.	(14)	Morphine Sulphate, $\frac{1}{2}$ gr.	(2)
Atropine Sulphate, 1-60 gr.	(13)	*Morphine Sulphate, $\frac{1}{2}$ gr.	(1)
*Caffeine Sodio-Salicylate, $\frac{1}{2}$ gr.	(43)	{ Morphine Sulphate, 1-12 gr. }	(12)
Cocaine Hydrochlor., 1-10 gr.	(23)	{ Atropine Sulphate, 1-250 gr. }	
*Cocaine Hydrochlorate, $\frac{1}{2}$ gr.	(22)	{ Morphine Sulphate, $\frac{1}{8}$ gr. }	(11)
*Cocaine Hydrochlorate, $\frac{1}{4}$ gr.	(40)	{ Atropine Sulphate, 1-200 gr. }	
*Cocaine Hydrochlorate, $\frac{1}{2}$ gr.	(54)	{ Morphine Sulphate, $\frac{1}{6}$ gr. }	(10)
Codeine Phosphate, $\frac{1}{4}$ gr.	(44)	{ Atropine Sulphate, 1-180 gr. }	
Colchicin, 1-100 gr.	(45)	{ Morphine Sulphate, $\frac{1}{4}$ gr. }	(9)
*Cornutin Hydrochloride, 1-60 gr.	(53)	{ Atropine Sulphate, 1-150 gr. }	
Curare, 1-12 gr.	(46)	{ Morphine Sulphate, $\frac{1}{2}$ gr. }	(8)
Digitalin, Crystalline, 1-100 gr.	(30)	{ Atropine Sulphate, 1-120 gr. }	
Ergotin Citrate, 1-100 gr.	(37)	* { Morphine Sulphate, $\frac{1}{2}$ gr. }	(7)
Ergotin Citrate, 1-200 gr.	(38)	{ Atropine Sulphate, 1-100 gr. }	
Eserine Salicylate, 1-100 gr.	(39)	Nitro-glycerine, 1-250 gr.	(65)
Homatropine Hydroch., 1-250 gr.	(47)	Pilocarpine Hydrochlor., 1-10 gr.	(34)
Hydrarg. Perchlor., 1-60 gr.	(29)	Pilocarpine Hydrochlor., $\frac{1}{8}$ gr.	(64)
Hydrarg. Perchlor., 1-30 gr.	(28)	*Pilocarpine Hydrochlor., $\frac{1}{4}$ gr.	(33)
†Hydrarg. Sozoiodol, gr. $\frac{1}{4}$, with Sodium Iodide, gr. $\frac{1}{2}$	(67)	*Pilocarpine Hydrochlor., $\frac{1}{2}$ gr.	(32)
Hyoscine Hydrobrom., 1-200 gr.	(49)	*Quinine Hydrobromate, $\frac{1}{2}$ gr.	(42)
*Hyoscine Hydrobrom., 175 gr.	(48)	*Sclerotinic Acid, $\frac{1}{2}$ gr.	(21)
*Hyoscine Hydrobrom., 1-10 gr.	(60)	*Sclerotinic Acid, 1 gr.	(20)
*Hyoscyamine Sulph., 1-80 gr.	(31)	Sodium Phosph. Co.	(69)
*Hyoscyamine Sulph., 1-20 gr.	(41)	Sparteine Sulphate, $\frac{1}{2}$ gr.	(56)
Morphine Bimeconate, $\frac{1}{8}$ gr.	(27)	Strophanthin, 1-500 gr.	(52)
Morphine Bimeconate, $\frac{1}{6}$ gr.	(26)	Strychnine Nitrate, 1-15 gr.	(62)
Morphine Bimeconate, $\frac{1}{4}$ gr.	(25)	Strychnine Nitrate, 1-10 gr.	(61)
Morphine Bimeconate, $\frac{1}{2}$ gr.	(24)	Strychnine Sulphate, 1-150 gr.	(14)
Morphine Hydrochlor., $\frac{1}{2}$ gr.	(55)	Strychnine Sulphate, 1-100 gr.	(17)
		Strychnine Sulphate, 1-60 gr.	(16)

* In the majority of cases each tube contains 20 "Tabloids." Those distinguished by asterisks contain only 12. † The new Sozoiodol of Mercury and Iodide of Sodium "Tabloids" are put up separately in tubes containing twelve "Tabloids" each.

THE HYPODERMIC CASE FOR DENTISTS.

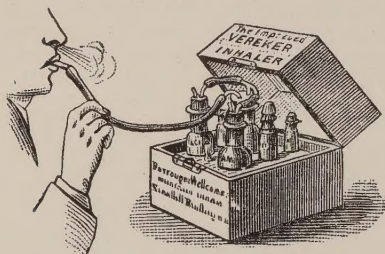
(B., W. & CO.)



We have recently introduced this with a view to providing a handy and compact case furnishing every requirement for hypodermic use in dental practice. The case measures 4 $\frac{3}{4}$ by 2 $\frac{3}{4}$ by 1 $\frac{1}{4}$ inches, and contains a specially constructed syringe with both curved and straight incorrodible needles; a removable syringe holder, which is a unique feature; Hypodermic "Tabloids" of Cocaine, $\frac{1}{4}$ and $\frac{1}{2}$ gr.; Atropia Sulph., 1-150 gr.; Apomorphine, 1-10 gr.; Caffeine Sodio-salicylate, $\frac{1}{2}$ gr.; Morphine Sulph., $\frac{1}{4}$ gr.; and a small glass mortar and pestle. Medical men who devote particular attention to dentistry will fully appreciate the convenience and portability of this case. Price, fitted complete, 21s.

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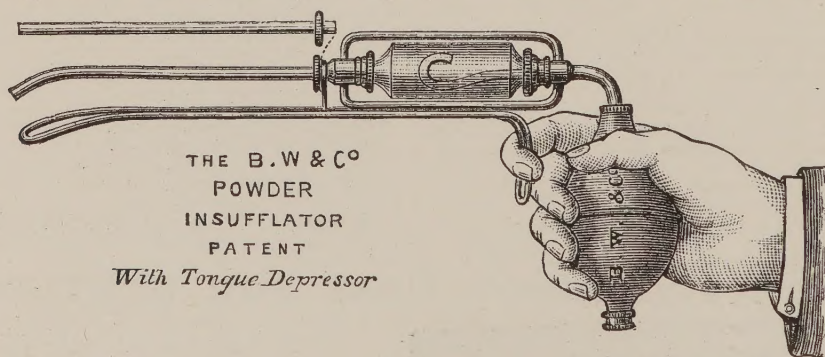


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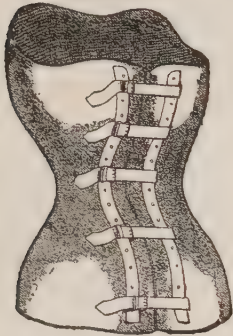
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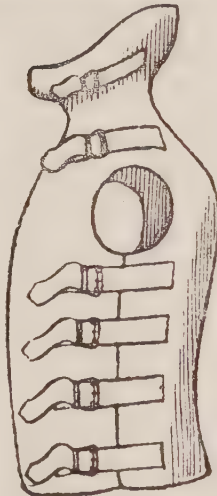
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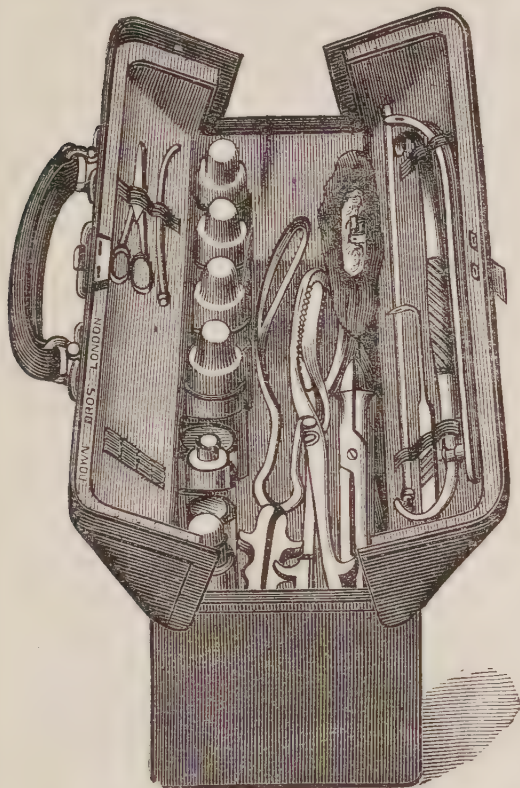
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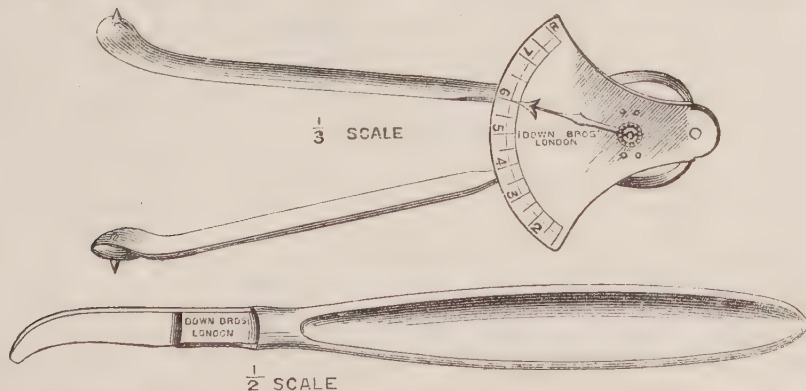
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2. Comparative Analyses of Human Milk and MELLIN'S FOOD.

	HUMAN MILK.								MELLIN'S FOOD AS ABOVE.
	Analyses quoted by Tanner.				Wurtz's.	Leeds' Analyses of 43 Samples.			
	Fair.	Dark.		Average.	Average.	Min.	Max.	Average.	
Water... ..	89.20	85.33	88.90	87.81	87.02	83.34	89.09	86.76	85.34
Sugar	5.85	7.12	4.36	5.78	7.05	5.40	7.92	6.99	6.95
Butter	3.55	5.48	2.69	3.90	4.06	2.11	6.89	4.01	2.54
Nitrogenous } matter ... }	1.00	1.62	3.92	2.18	1.67	0.85	4.86	2.05	4.45
Salts	0.40	0.45	0.13	0.33	0.29	0.13	0.35	0.21	0.72
	100.00	100.00	100.00	100.00	100.00				100.00

Mellin's Food Works, PECKHAM, S.E.

THE
YEAR-BOOK OF
TREATMENT

FOR

1894.

*A CRITICAL REVIEW FOR PRACTITIONERS OF
MEDICINE AND SURGERY.*

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P R E F A C E.

To the present "Year-Book of Treatment," which is the tenth of the series, two new articles have been added.

The first of these, on "Medical Diseases of Children," is by Dr. DAWSON WILLIAMS. There has been no separate article on this subject since the Year-Book of 1890. The increasing literature, however, especially with regard to the artificial feeding of infants, is sufficient reason for a special article being introduced again.

The second is on "Bacteriology," by Dr. WILLIAM HUNTER. The great progress of this, the youngest branch of the Science of Medicine in its relation to treatment, demands a separate review.

THE EDITOR.

January, 1894.

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THE
YEAR-BOOK OF TREATMENT
FOR 1894.

DISEASES OF THE HEART AND
CIRCULATION.

BY J. MITCHELL BRUCE, M.D., F.R.C.P.,

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I.—INTRODUCTION.

ONCE more we have to chronicle that the greater part of the literature of the year on the subject of the treatment of diseases of the heart relates to the employment of familiar remedies. The interest that was excited by the discussion which we noticed twelve months ago on the use of digitalis and its allies in aortic disease has scarcely declined, the problem being more particularly regarded in its strictly practical aspect. In this connection, and with respect to the action and uses of cardiac tonics in general, the full reports of the discussion in the Therapeutic Section at the Nottingham meeting of the British Medical Association provide abundant material for analysis and careful perusal.

Amongst new drugs, or old drugs with a revived reputation, are theobromine and oleander. As might have been anticipated, we have to record the introduction of "extract of heart" for subcutaneous use in cardiac weakness.

On the present occasion it will be found that particular attention has been devoted to non-medicinal measures for heart disease.

The literature of Graves's disease proves to be even more voluminous than usual, the rapid advance of our knowledge of the nervous system and of the importance of the thyroid in the

economy having naturally stimulated fresh research and considerable speculation. The closely related subject of tachycardia is also abundantly illustrated this year.

We will now take up the subjects in natural order.

II.—FAILURE OF THE HEART IN VALVULAR DISEASE.

A highly important discussion on the subject of cardiac tonics and the indications for their use was held at the Nottingham meeting of the British Medical Association (*Brit. Med. Journal*, Nov. 26, 1892). It was opened by Sir William Broadbent, who said that failure of compensation in *aortic regurgitation* is manifested in two distinct ways, and that there are two different modes of death. In the one the result is defective propulsion of blood into the arterial system, manifested by faintness, giddiness, and sudden weakness of the legs, sometimes by anginoid pain; death is by syncope. In the other there is obstructive backworking through the lungs and right heart, giving rise to venous obstruction and dropsy, exactly as in mitral insufficiency. There are, in effect, aortic physical signs with mitral symptoms.

We have in this, says Sir William Broadbent, an explanation of the different views as to the influence of digitalis in aortic insufficiency. When the tendency indicated by the symptoms is defective propulsion with failure of arterial blood supply to the brain, the effects of the drug are uncertain and even doubtful. While it is sometimes apparently beneficial for a while, a frequent result is the production of irregularity of the pulse with aggravation of the symptoms, and occasionally of vomiting attended with rapidly increasing weakness of the action of the heart. When, on the other hand, the symptoms are due to secondary dilatation of the left ventricle not adequately neutralised by hypertrophy, with or without mitral regurgitation, and to the effects of this upon the pulmonary circulation and right ventricle, we have exactly the same opportunity for the beneficial influence of digitalis in reinforcing the right side of the heart as in mitral regurgitation, and the same favourable result. The result, indeed, is sometimes much more striking, and the removal of dropsical effusion more rapid.

The effects of digitalis in aortic regurgitation have been discussed by competent authorities mainly on theoretical considerations, relating to the prolongation of the diastole and the increased regurgitation which this will permit. According to Sir William Broadbent, the following will afford a clear and accurate idea of

what is taking place :—At the end of systole, the first part of the diastole is not a mere passive filling of the ventricle by blood entering from the auricle (and in the case under consideration from the aorta), but a sharp rebound from extreme contraction, constituting a sudden active dilatation which sucks in the blood. This is an important part of the cardiac rhythm in the normal heart ; and it is still more important when the ventricle is enormously dilated and hypertrophied, as it is in aortic incompetence. The blood, thus entering the ventricle by its own suction action, will constitute its main charge, and a much larger proportion of it will rush in through the large auriculo-ventricular opening than through the comparatively small chink left between the damaged semilunar valves, even if the pressure be high in the aorta. From the auricle the main charge of the ventricle is thus obtained. During the remainder of the diastole some additional blood enters the ventricular cavity and distends it ; and now the regurgitant aortic stream comes into competition with the onward flow from the auricle, and the relative pressure on the two sides will be an important factor in the determination of the proportion which will enter from the auricle and aorta respectively. Another factor will be the size of the two openings ; and a third factor will be the amount of blood which the ventricle is prepared to receive. If we suppose the ventricle to be absolutely full and incapable of further distension, not only will the inflow from the auricle be stopped, but, the pressure in the aorta being higher, the current will actually be reversed unless this is prevented by closure of the mitral valve. If, on the other hand, the ventricle can accept a considerable further amount of blood, a certain proportion of it will obtain admission from the auricle, as the whole cannot force its way in from the aorta through the much smaller orifice in the time allowed.

Digitalis is even less competent to overcome the direct effects of *aortic stenosis* than of regurgitation, and the left ventricle may be injured if stimulated to drive its contents through a narrowed orifice. By relaxing the arterioles with nitroglycerine, more relief is obtained, deducting thus the arterio-capillary resistance from the total work with which the heart has to contend.

Adherent pericardium is another condition which influences the results to be obtained from the administration of digitalis. A very moderate mitral valve affection not infrequently is attended by the premature development of symptoms due to pericardial adhesion. Thereby the right ventricle is prevented from coming to the aid of the left. The latter can cope with the additional work imposed by obliteration of the pericardial sac, but the right

ventricle, having only thin muscular walls, has difficulty in dragging the pericardium with it in its systole, and is probably more seriously hindered in its diastolic rebound. Sudden death, which is extremely rare in uncomplicated mitral disease, may occur when the pericardium is adherent. Just as pericardial adhesions precipitate the supervention of symptoms, they interfere with the beneficial effects of digitalis.

No practice, says the author, could be worse than to look upon a valvular murmur as the signal for giving digitalis. The occasion for the employment of the special cardiac tonics is the appearance of symptoms indicating embarrassment of the circulation and the absence, inadequacy, or breaking down of compensation.

In the late stages of *typhoid fever* digitalis is sometimes of the greatest possible service when the heart's action is extremely weak and frequent, and the pulse tension very low.

Sir William Broadbent has not found *strophanthus* so generally useful and trustworthy as digitalis; and he has not been able to formulate any specific indications for its employment in preference to digitalis. He has frequently found that the administration of *caffeine* simultaneously with digitalis will give favourable results, which are not to be obtained by increasing the dose of digitalis.

When given in combination with digitalis, or other remedies of the same class, *sparteine* finds its best opportunity; it will then induce an amount of diuresis not otherwise obtainable. His experience lends some support to the view that *convallaria* exercises a special influence on nervous palpitation, and even on tachycardia.

The paper of which the preceding paragraphs are a *résumé* excited a discussion of unusual importance. **Lauder Brunton** said that Sir William Broadbent had pointed out that digitalis and other cardiac tonics increased contraction both of heart and vessels. The contraction of vessels was sometimes too great for the heart to overcome, and cardiac tonics might therefore be injurious. In such cases the addition of substances such as nitrites, which dilated the vessels, was useful as an adjunct to cardiac tonics. *Strophanthus*, which acted more on the heart than on the vessels, might be useful; and oxysparteine, which appeared to stimulate the heart and hardly to affect the vessels, might possibly be even more useful. In cases of chronic alcoholism, digitalis seemed sometimes to have little or no effect in slowing the heart. This supported the evidence of physiological experiments to the effect that digitalis slowed the heart, not by its action on the muscular fibre only, but also by its action on the cardiac nerves.

In severe cases of heart disease absolute rest was most advantageous. The rest should be in bed, and the patient should not rise for any purpose whatever ; and if the bed-pan could not be used, the commode should be raised to a level with the bed by a platform. Massage was of the utmost value, and graduated exercise might be given by means of Gärtner's ergostat. This was an adaptation of the prison crank, and the amount of work could be exactly graduated. Elimination by mercurials and jalap powder was also of very great service.

Professor Clifford Allbutt observed that adjuvants, such as deobstruent remedies—massage and the like—contributed to the effect of cardiac tonics by clearing up the arrears produced by the long-standing defects of a weak heart. By the use of cardiac tonics a potential restoration of equilibrium might be attainable, but the heart had no good chance until the back-reckonings were cleared up. Gastric congestion, hepatic fulness, retained waste in the muscles, stagnant venous cavities, and the like, must be set straight. Blue pill, massage, and graduated exercise were essential factors in the treatment even of those heart diseases in which digitalis was also most appropriate. Mercurial aperients are of special service as part of the treatment of dilatation of the heart both in unloading the liver and right heart and in lowering the arterial tension.

Oliver, of Newcastle-on-Tyne, in speaking of the good effects of *adonidine* in cases of traumatic aortic regurgitation, agreed with **Lauder Brunton** as to the inefficiency of digitalis in the dilated heart of alcoholic subjects, these cases being best dealt with by strychnine or *nux vomica*. As to the advisability of giving digitalis in aortic regurgitation, **Oliver** remarked that in and around Newcastle there was a large artisan-class population many of whom worked hard and drank hard, and observation had led him to believe in the good effects of digitalis in aortic regurgitation. He had not met with a case of aortic regurgitation, carefully chosen and treated by digitalis, presenting unfavourable and alarming symptoms. The danger of aortic regurgitation lay in its accompanying low arterial tension, with rapidity of the heart's action and ineffectiveness of systole. Digitalis greatly slowed the heart's action, raised the arterial pressure, and flushed the coronary arteries, thereby improving the nutrition of the heart and removing the waste products from the myocardium. Many of the alarming symptoms attributed to digitalis were due to the consequences of the disease itself and the effect of the accumulated waste products upon the myocardium. That, with the dilated condition of the right ventricle, explained sudden death

in heart disease. Oliver believed in the good results of the employment of small doses of blue and colocynth pill frequently repeated—every day or every second day. Digitalis did not act well in the later stages of heart disease. What was required was to eliminate by bowels and kidneys the waste products that were accumulating in the blood, and paralysing the walls of the heart, or poisoning the nerve ganglia.

Lindsay, of Belfast, had largely tried digitalis and strophanthus, and considered that the latter was sometimes a useful alternative. The chief successes of digitalis were in mitral regurgitation; it was almost useless in mitral obstruction; aortic cases constituted the debatable area. Pure aortic obstruction sufficient to cause symptoms was, he thought, a rare condition; on the other hand, aortic regurgitation had been very frequent in his hospital experience. Belladonna was often of service in such cases. Digitalis sometimes was of great service; sometimes as signally failed. He had found great difficulty in distinguishing the cases of aortic regurgitation in which benefit might be expected from digitalis. He had generally found it to fail if the chief symptoms complained of were præcordial oppression, giddiness, and slight dyspnœa; where pulmonary congestion and dropsy were present, benefit might be expected.

Stockman, of Edinburgh, directed attention to the value of small doses of digitalis. He said that Broadbent had insisted on the fact that digitalis increased the propulsive power of the heart; but it must be remembered that the left auricle shared in the slowing, and therefore got more time to propel its contents into the ventricle, and thus assist in restoring the balance of the blood distribution. In any form of valvular lesion when the blood was not properly distributed, digitalis would thus do good, if not given in too large doses. The bad results often obtained were probably frequently due to excessive doses.

Handford referred to the ill effects of digitalis in aortic regurgitation as not uncommon in his experience, especially in cases due to arterial sclerosis and not to valvulitis, and attributed it chiefly to the action of digitalis in contracting the small arteries and raising the vascular tension. In mitral stenosis the action of digitalis in producing allorhythmia was so common as to be of much diagnostic value. In anæmia, dilatation of the right heart was extremely common, and when not recognised and properly treated might lead to permanent cardiac disease. Digitalis was of the greatest possible value when combined with iron, especially in anæmic patients who could not be confined to bed.

Broadbent, in reply, observed that the area of the discussion

had been extended to methods of treatment beyond the terms of the reference, or he should have been equally emphatic with others as to the necessity for rest when compensation had broken down—the greatest of cardiac tonics, indeed, was rest. He should also have dwelt upon the importance of mercurial aperients, which did much more than clear away arrears. A calomel and colocynth pill was often a necessary preliminary to the administration of digitalis, which without it would fail to make any impression on the stagnating circulation. It at the same time unloaded the abdominal veins and right heart, and increased the metabolic action of the liver cells, thus relieving the blood of impurities. He had no objection in principle to the Oertel system of graduated exercise, and had always protested against the idea that patients suffering from all forms of heart disease and in all degrees should be condemned to live on one floor and to abstain from walking uphill. The special value of the Oertel system would be in the numerous cases of imaginary heart disease. Such patients would not find the ergostat so dull as Professor Clifford Allbutt thought. Watching the movement of the needle on the disc which recorded the number of revolutions of the handle might be to them a matter of the most absorbing interest. In criticising the view that digitalis acted directly on the muscular fibres, Brunton seemed to consider that intra-cardiac and intra-arterial high pressure went together, and had the same effect on the frequency of the heart's action. This was by no means the case, as was seen in the effects of exercise, when the pulse became very frequent, the intra-cardiac pressure was high from the rapid arrival of the blood from the veins in consequence of compression by muscular action, while the arterial tension was extremely low. On the other hand, resistance in the peripheral circulation, or high arterial tension, was shown by Marey to slow the action of the heart. Oliver had said that numbers of men who pursued laborious occupations, and were usually "nippers," came under his observation suffering from aortic incompetence, and that they were invariably benefited by digitalis, especially when strychnine was combined with it; but under these conditions, long before the regurgitation had grown so considerable as to become dangerous in itself, or to be attended with symptoms of its own, it would give rise to dilatation of the left ventricle, with secondary backworking upon the right heart and systemic veins. The symptoms of which these patients complained were due to this condition, which was exactly that in which digitalis was useful. When aortic incompetence was advanced, and its characteristic indications were present, the

administration of digitalis might be attended with danger. Not infrequently remedies having an opposite effect, such as nitroglycerine, were more useful, the relief to the heart afforded by diminution of the resistance in the arterioles and capillaries being of greater service than increase in the vigour of the cardiac systole, and in some cases, especially when anginoid pain was one of the symptoms, the tolerance of nitroglycerine was very remarkable, and enormous doses were taken for a long time.

Sir William Broadbent also writes on the use of digitalis in mitral stenosis (*Brit. Med. Journal*, vol. ii., p. 3, 1892). He says that if we examine the effects of digitalis in mitral stenosis we shall see why they are less certainly favourable, and sometimes clearly unfavourable, as compared with mitral incompetence. In an uncomplicated case of stenosis the left ventricle is neither dilated nor hypertrophied, and the arteries generally are already small and contracted. No obvious advantage can be seen in further contraction of the arterioles; in point of fact, the symptoms are somewhat relieved by causing them to dilate. Nor is any great improvement in the output of blood to be gained by more vigorous contraction of the walls of the left ventricle, as they are not specially strong, and the cavity is small. But it would seem that increased vigour in the contraction of the right ventricle should have the same good effect here as in mitral regurgitation, and some beneficial influence is indeed very commonly observed at first. The conditions, however, are different. In mitral regurgitation the increased amount of blood driven into the pulmonary artery antagonises the reflux into the auricle, and finds its way more and more easily into the left ventricle, whereas it cannot be forced through a constricted mitral orifice beyond a certain rate of speed; and if the ventricle is stimulated to contract more than is required for this, it encounters an insuperable obstruction, and becomes embarrassed in its action. A common result is irregularity in the beats, accompanied by a sense of præcordial oppression; and not infrequently the heart's beats are in couples, the first of which alone reaches the wrist, the second having no aortic second sound.

Two authorities formulate their views on the employment of the most powerful of all our measures for the relief of cardiac suffering—the hypodermic injection of morphine. H. A. Hare (*Therap. Gazette*, p. 529, vol. xvii., No. 8, 1893) directs attention to the value of morphine in certain cases of heart disease. Those who have used morphine under these circumstances, he says, assert that its influence is felt to the greatest advantage when the mitral valves are diseased; yet it certainly acts very well in

aortic lesions. He mentions the case of a man who suffered from well-marked aortic disease, with dyspnœa and exhaustion, the severity of which was absolutely terrifying. The hypodermic injection of a quarter of a grain of morphine permitted sleep and temporarily saved life on successive nights. In this case there were well-marked dropsy of the lower limbs and well-marked evidence of pulmonary œdema. The relief of the gasping respiration, of the wild desire for air, the dropping of the head from exhausting loss of sleep, to be followed by wild efforts to get the breath—the relief of these distressing symptoms in this case and others has done much to increase Hare's confidence in morphine at such times. He has, however, seen results follow its use by no means so desirable, and in cases in which beforehand it seemed impossible to discover any particular sign to contraindicate its use. That morphine does good at certain times in cases of heart disease is proved. Its use in this way is rational, for the drug has been found, both experimentally and clinically, to be an active cardiac stimulant.

Hervouet (*Canada Lancet*, p. 71, vol. xxv., 1892 ; *Practitioner*, p. 216, March, 1893) records the results of his studies of the action of morphine in failure of the heart in valvular disease. In aortic insufficiency and stenosis all authors agree as to its value. In mitral lesions, when other means fail, morphine may be tried, in order to calm the dyspnœa and nervous symptoms and induce sleep. In certain cases where direct cardiac remedies are of no service, or even injurious, then morphine will calm and stimulate, easing the dyspnœa and enabling the other drugs to act. If we use it in asystole, it is well to combine digitalis with the morphine. Caffeine, on account of its stimulating action on the heart, is of especial use in replacing the injections of morphine, when it is desired that the patient do not become habituated to its influence. It may be employed at the same time as the morphine. Morphine should, indeed, in every case be used with great prudence. More than one-sixth of a grain should not be given at a time ; often half that amount will be sufficient. It is more advisable to repeat the injections frequently than to administer large doses.

Ever since the introduction of nitroglycerine into therapeutical use, it has been extensively combined with digitalis in certain classes of cases of cardiac failure, particularly in Bright's disease with progressive dilatation of the left ventricle. It is of great importance to have an authoritative expression of opinion on the *rationale* of this practice as considered both from the strictly pharmacological and from the practical point of view.

In his learned and exhaustive Croonian Lectures on the Pharmacological Action and Therapeutic Uses of the Nitrites (*Lancet*, p. 123, July 15, 1893), Professor Leech discussed the value of these measures in the treatment of failure of the heart. In the dyspnœic attacks which so often accompany cardiac dilatation connected with alcohol, gout, etc., much relief is often yielded by nitrites of ethyl and sodium and nitroglycerine. The nitrites are naturally most useful in mitral disease, since here paroxysmal dyspnœa is more frequent than in aortic troubles; but aortic incompetence is no bar to the use of nitrites in small quantities when the breathing is oppressed. In valvular disease, as in simple dilatation, weakness and irregularity of the heart's action need not be taken into account in giving small doses of the nitrites for dyspnœic attacks; such doses do no harm even if they do no good. In syncope and heart failure it is more difficult to determine the propriety of using nitrites. The heart will be relieved of part of its work and beat more quickly under their influence; but it is not easy to graduate the dose to the necessities of the heart, and a quantity thrown into the circulation by inhalation might easily stop a failing heart. Nitrite of amyl has often been given in cases of apparent heart failure, including cardiac failure due to chloroform, and no evil consequences resulted from its employment; on the contrary, often with benefit. Nitroglycerine has also been used in syncope and collapse. There is evidence, too, that in cardiac failure good results have followed the use of nitrite of amyl and of nitroglycerine, and Professor Leech thinks that there are grounds for the use of the drugs in small quantities. A practical point of much importance may be noted here—namely, with respect to the official compounds of the nitrites. On account of the decomposition of nitroglycerine in presence of any salt, it is better to employ the tabellæ, or else a simple dilution of the liquor trinitrini with distilled water. For subcutaneous injection, in the rare cases where inhalation of amyl nitrite fails, nitroglycerine is better than sodium nitrite. The benefits of spiritus ætheris nitrosi have frequently been challenged, even when the spirit has originally contained its proper proportion of nitrite of ethyl; and this lack of appreciation appears to be largely the result of the rapid decomposition which occurs on mixing it with water. Hence the valuable recommendation that the dilution should be effected only immediately before the drug is given. It is curious, however, to learn that this decomposition is retarded or prevented when solutions of acetate or citrate of ammonium are mixed with the spirit of nitrous ether. This combination has so long found favour with practitioners that it is comforting to

know that their faith was supported, even though unconsciously, by sound scientific evidence.

In connection with these views it is well for us to take into consideration the opinion expressed by the writer of an editorial article in the *Therapeutic Gazette*, p. 470, vol. xvii., No. 7, 1893, on the value of vaso-motor dilators in conditions of cardiac failure, to the effect that, in the use of the nitrites as vaso-motor depressants in cases of cardiac failure, their dominant action is not only depressant to the vaso-motor system, but ultimately powerfully depressant to the heart itself. The proper use of the nitrites is limited, therefore, in his opinion, to the production of temporary vaso-motor depression, as they cannot be used for any length of time without the integrity of the cardiac muscle being endangered. The continued inhalation of nitrite of amyl is conducive of nothing but disastrous results, whereas its employment for a moment, or a single hypodermic dose of nitroglycerine, may, by instantaneous relaxation of the peripheral bloodvessels, enable the heart to give the few beats which will empty its cavities and thus permit it to return to the performance of its customary duties. We should therefore have recourse to the nitrites as temporary, not as continuous, therapeutic agents.

H. C. Wood, of Philadelphia (*New York Medical Times*, No. 5, Aug., 1893), in a lecture on Strophanthus and Caffeine, says that strophanthus is a drug which acts very quickly and pugnaciously as compared with digitalis. Like digitalis, it acts directly upon the heart-muscle, but it appears to lack the trophic influence of digitalis. Its effects are less permanent than those of digitalis. It vastly exceeds digitalis in its diuretic action. The place, therefore, of strophanthus in our category of cardiac medicines is as an adjuvant and guard-relief, so to speak, of digitalis. Digitalis is the thing to stand by; strophanthus is the remedy which we use to relieve digitalis.

In caffeine we have a mild stimulant to the heart and a powerful stimulant to the kidneys, which is able to serve us somewhat in heart disease, and is especially useful when there is dropsy in a case of heart disease.

Prominent among other remedies in the treatment of chronic heart disease is strychnine. It is one of the most powerful of the vaso-motor stimulants we have. It stimulates the vaso-motor centres; it is a centric stimulant. The respiratory centre, the vaso-motor centre, the motor centres, all feel the influence of this powerful stimulant, and strychnine therefore serves us in cases of heart disease well, as an aid to other remedies when we want especially to tone up the vessels.

Wood likewise emphasises the important fact that by the careful use of mercurials preparatory to the employment of cardiac tonics, results are obtained in cases of old heart disease that cannot be obtained in any other way.

Solomon Solis-Cohen (*Medical News*, p. 351, vol. i., 1893) says that the disappointment not rarely experienced in the employment of sulphate of sparteine may, in some cases at least, be ascribed to insufficient dosage. In his experience sparteine usually acts best when given, at first, at intervals of about two hours, in doses of from a quarter to half a grain *per os*, or one-eighth of a grain hypodermically. After from twelve to thirty-six hours of such dosage the intervals may be lengthened; and after three or four days one or two half-grain doses daily will often be sufficient. In a few instances, one-grain or two-grain doses, three or even four times a day, may act better than the smaller and more frequent doses, but the latter ought to be tried first. Sparteine is, however, usually more efficient as a cardiac tonic when combined with caffeine, and its diuretic action may be powerfully aided by small doses (about one-sixteenth of a grain) of pilocarpine, as also by draughts of hot lemonade containing spirit of nitrous ether.

Germain Sée (*Le Progrès Méd.*, p. 87, Aug. 1, 1893) has found theobromine a powerful diuretic in some cases of cardiac dropsy. He related to the Academy of Medicine in Paris the details of seven such cases in which he had used it successfully. In one case, in which there was much œdema and very scanty diuresis (about half a pint), a dose of 45 grains raised the amount of water passed to two pints; and further doses up to a drachm on the two succeeding days increased the amount to nearly ten pints. The œdema completely disappeared. Sée strongly advises the use of pure theobromine and not the mixture commonly known as diuretin, which contains about 60 per cent. of theobromine along with some caustic soda. Comparing theobromine with other diuretics, Sée remarks that digitalin acts only on the heart, and produces diuresis only as long as it strengthens the force of the circulation. Strophanthus and tincture of strophanthus give very uncertain results. Caffeine is a true diuretic, but unfortunately it also excites the nervous system. Maté is only an irritant. Calomel is dangerous as a diuretic. Theobromine acts directly upon the kidney, and sometimes produces considerable albuminuria without any poisonous effects. Its diuretic action continues some twenty hours after the dose has been given—decidedly longer than with caffeine. It does not irritate the stomach nor excite the nervous system. It does not

accumulate in the system, nor lead to any habit requiring increased doses. Theobromine is insoluble, and had best be given in small powders. The total dose for the first day may be about 30 grains, which may be raised on the following day to 60 grains, but reduced afterwards to about 30 grains per diem.

Von Oefeli records in the *Aerztl. Rundschau* (*Brit. Med. Journal* Supplement, p. 68, Oct. 22, 1892) the results of his clinical investigations with the various preparations of the cardiac tonic, nerium oleander. The most suitable preparation is a concentrated infusion to which alcohol and glycerine may be added. The effect of the remedy is prompt and lasting. The pulse becomes slower and more regular; the palpitation, cedema, and dyspnoea of valvular disease disappear; and diuresis is more marked than with any other member of the digitalis group. Oleander, like convallaria, differs from adonis in increasing peristalsis. It has no such action on the vessels as strophanthus, and may thus be given in atheroma. It differs from carpainum hydrochlorate ("Year-Book" for 1893, p. 21), which has only a momentary action, and which is to be recommended for subcutaneous injection. Oleander is indicated, in cardiac and renal diseases with their concomitants, and it may also be used in diseases of the myocardium and in atheroma. It is contraindicated if diarrhoea or vomiting be present. A small daily dose is from 0.05 to 0.5 gramme of the raw drug.

Lauder Brunton (*Practitioner*, p. 190, Sept., 1893) has contributed a very important paper on the use of rest in cardiac disease. He says there is hardly any class of cases in which treatment is more satisfactory than affections of the heart. One of the most important elements in the treatment of such cases is rest; and rest may be not only a remedial measure, but a preventive one. As a remedial measure, rest frequently requires to be absolute; as a preventive measure, it may be only relative. The amount of rest enjoined must be carefully proportioned to each case. Absolute rest gives satisfactory results in cases of advanced mitral disease when the power of the heart is failing. In advanced mitral disease we find a close approximation to the condition of emptiness of the arteries and fulness of the veins. If such patients are made to take absolute rest, we frequently find the circulation recovering its balance, the arteries becoming filled and the veins emptied, the dropsical effusion and venous engorgement of the organs disappearing, and the patient recovering a fair amount of health.

In the treatment of cardiac dilatation occurring either in growing schoolboys, or in chlorotic girls either at school or—still

more frequently—after they have left school, comparative rest may be useful; and sometimes absolute rest may be almost essential. Comparative rest is all that is wanted in some cases as a prophylactic measure; and where the boy is growing quickly, he should be carefully examined from time to time by a medical man, and care taken that his exertions are regulated according to the power of his heart, not according to the strength or size of his limbs. While it is very advisable that boys should be kept from dawdling about and from laziness, it is equally necessary that their young hearts should not be overstrained by compulsory runs either along a regular course or over the fields in a paper-chase. Gentle exercise is certainly advisable in chlorotic girls, but it should be carefully graduated. In such cases exhaustion is certain to do harm; moderate, gentle, graduated exercise is almost certain to do good. In chlorotic girls, when the heart is distinctly dilated and there is consequently imperfect closure of the mitral orifice, massage may be used as a useful adjunct to other treatment, as it gives the patient's limbs exercise without any strain being put upon the heart. Lauder Brunton considers that in cases of cardiac dilatation due to chlorosis, massage along with absolute rest is worthy of a trial.

Regarding rest in cases of fatty heart, Lauder Brunton thinks gentle exercise more likely to bring about a healthy condition of the heart than absolute rest; in other words, adopting the Oertel graduated-exercise method. A similar system is suitable in cases where the heart is beginning to fail from imperfect blood-supply due to atheroma of the aorta. If the aorta becomes atheromatous close to the valves, the lumen of the coronary arteries may be encroached upon; and, moreover, the atheromatous structure is not elastic, but is rigid and unyielding, and therefore will not respond to the call of the heart for increased blood-supply when any extra work is thrown upon it. In people of middle age we ought to auscultate carefully over the aorta, because we may frequently hear a slight murmur indicative of commencing atheroma. In these cases, by attention to hygienic conditions, and by the employment of 10-grain doses of iodide of potassium three times daily, if we do not prevent we may perhaps retard the progress of the atheromatous process in their vessels, for if this process be not looked after, it is likely to lead to cardiac enfeeblement.

In mitral disease there comes a time when cardiac tonics, even if pushed to their utmost limit, will fail to give relief by themselves. It is in such cases that absolute rest is of importance. In this respect we should have regard to the quality of

the bed on which the patient lies. Diet is of much importance ; and when the symptoms are severe, patients sometimes do exceedingly well on a pure milk diet ; so that the dietetic treatment of such cases is practically almost the same as that of typhoid fever. The milk is less likely to cause flatulent distension and consequent distress than a mixture with farinaceous food, and its lactose appears to have a really decided diuretic action. Massage in such cases seems to be very useful. It stirs out the waste products from the muscles and sweeps them into the general circulation, where parts of them are excreted by the kidneys and parts of them undergo further combustion. When we put our patients to bed and insist on absolute rest, we put a stop to the natural removal of waste, and we must supply its place by some other means. Now, the place of exercise is to a great extent supplied by massage. The masseur removes the waste products from the muscles ; *he* takes the exercise and the patient gets the benefit. In short, the utility of massage is that the patient gets the advantages of the exercise without overdoing either his muscles, his nervous system, or his heart. In cases of cardiac disease, massage allows the treatment to be carried out more easily than it would otherwise be, for it removes the feeling of weariness and irritability, fidgetiness and unrest, which the patients get. It helps to empty both the lymphatics and the veins, and by thus driving the blood out of the venous into the arterial system, it greatly assists the action of cardiac tonics. By the use of massage, combined with absolute rest, milk diet, and cardiac tonics, we often are able to restore patients suffering from cardiac disease who at first sight appear only to have a few days to live.

The method of multiple punctures of the integuments in severe and obstinate cases of cardiac dropsy has been described in these pages on a previous occasion ("Year-Book" for 1891, p. 21).

Arnemann (*Therap. Monatshefte*, No. 10, 1892 ; and *Practitioner*, p. 287, April, 1893) discusses the value of deep incisions, instead of punctures, into the subcutaneous tissues in general dropsy, and quotes a case where it was of the greatest benefit. The patient, a man of sixty-three years of age, suffered for some years from Bright's disease—probably the contracting form. He had several times had great œdema of the legs, which was reduced by rest in bed, diuretics, etc. In the early part of 1889 he became waterlogged, and in spite of various remedies got rapidly worse. He was cyanotic, with intense dyspnœa. The pulse was irregular ; the urine in abeyance. Under these circumstances extensive incisions were made in the skin. They were carried right through

the whole depth of the enormously oedematous skin, and each measured about one inch and a quarter in length. Serum began immediately to flow, the patient breathed better, and later could lie down. The fluid flowed uninterruptedly, in such quantity that repeated changes of towels were of little use. It ran through the bed on to the floor and out into the neighbouring room. The relief was very striking, an amendment beginning at once, and reminding one of the relief afforded when an empyema is evacuated. The procedure adopted in this instance with such success was to make few incisions—not more than eight, but these large, the skin and subcutaneous tissue being divided so that a free exit was provided for the pent-up serum.

Professor Leyden (*Zeitsch. f. klin. Medicin*, vol. xxiii., Nos. 1 and 2, 1893) publishes an interesting account of the management of cases of heart disease complicated with pregnancy. After calling attention to the views of the late Angus Macdonald, he embodies his own conclusions in the following statement: Women suffering from heart disease conceive as easily and as frequently as the healthy. When pregnancy occurs, the period of gestation is more liable to be interrupted by spontaneous abortion. Pregnancy exposes cardiac cases to the danger of more or less marked aggravation of the heart's condition, sometimes temporary, sometimes permanent, and adds in some cases a considerable risk to life. A fatal result follows in immediate relation with pregnancy and the puerperium (almost 40 per cent. in severe cases), rarely during the pregnancy itself, more frequently during parturition, and oftenest soon or some time after delivery. The great majority of cases of heart failure which showed grave symptoms or a fatal result during pregnancy and the puerperium were affections of the mitral valve, and mostly of the stenotic form. The immediate cause of death is pulmonary oedema, or cardiac failure, in some just after confinement, in others days or weeks later. And those who appear to have borne the lying-in period well remain for a long time very weak, and suffer some lasting damage to the compensation. Medical men should advise women suffering from heart disease against marriage; and in any case repeated pregnancies should be avoided. If in the course of pregnancy disturbances of compensation set in which cannot be removed, and, in spite of energetic treatment, persist, and reach a dangerous degree, then the termination of the gravid state by artificial means is indicated and justified. This indication is the more urgent if dyspnoea, oedema, and weakness progress continuously. The results of artificial abortion in heart cases are apparently better than formerly; it is not now left over to the last moment.

The cautious use of chloroform during delivery is permissible when there is heart disease, provided the patient is not in too prostrate a state.

III.—IDIOPATHIC CARDIAC ENLARGEMENT; CARDIO-ARTERIAL SCLEROSIS.

An exhaustive account of cardio-sclerosis is given by **Huchard** (*Revue de Méd. and Brit. Med. Journal* Supplement, p. 64, Oct. 15, 1892). This distinguished French authority says that the first, or curable, stage of the disease is characterised by premonitory arterial hypertension, and by sclerosis which is arterial at the outset, and without visceral complications. The second stage, either not curable or but slightly so, is characterised by invasion of the organs. Thus the extra-cardiac symptoms of cardio-sclerosis are of much importance. The first thing, then, is to treat the arterial hypertension, which the author believes to be the real cause of the arterial disease. This is done by diet, hygienic measures, and medicinal agents. Over-indulgence in meat, especially if undercooked or "high," and abuse of tea, spirits, and other beverages, the quantity of which tends to produce vascular plethora, should be avoided. Tobacco should be entirely given up, as it increases arterial tension by producing vascular constriction. Massage produces greater activity in the peripheral circulation, along with vascular dilatation and diminution in the arterial tension; thus the heart is relieved. The functions of the skin should also be encouraged. Iodides, nitrites, and nitroglycerine are the useful drugs. The meiopragic symptoms should be treated with as much rest as possible to the organs concerned. Toxic symptoms are due (1) to the absorption of toxins from articles of diet, such as high game and underdone meat; and (2) to renal incompetency to excrete such toxins, and hepatic insufficiency to destroy them. When these symptoms occur, such as dyspnoea, they may almost certainly be made to disappear by exclusive milk diet and intestinal antisepsis. Huchard points out the uselessness of acting on the heart with digitalis when the obstruction really lies in the vessels. He divides cardio-sclerosis into three periods: (1) arterial, (2) cardio-arterial, and (3) mitro-arterial. In the arterial stage the above-described treatment should be carried out. In the cardio-arterial stage the occasional use of digitalis and its allies should be added when symptoms of hypo-systole appear. In the mitro-arterial stage the treatment is such as is employed in badly compensated mitral disease, because this stage is characterised

by dilatation of the cardiac cavities and diminution of arterial tension.

IV.—ANGINA PECTORIS.

Professor Leech, in his Croonian Lectures (*The Lancet*, p. 123, July 15, 1893) on the Nitrites, points out that the cases in which they are most likely to be useful are those in which the heart is embarrassed from a want of the normal relationship between its power and the calibre of the vessels through which it has to transmit the blood.

Angina pectoris is the most conspicuous ailment of this class. A large proportion of anginal attacks seem due to a rise in tension, and this in turn is caused by a decrease in the calibre of the systemic or pulmonary vessels, and the consequent sudden call on the heart for increased propulsion, to which it is not perhaps able to respond on account of alteration in its walls. Other theories have been proposed, but Leech did not attach much importance to them. In reducing this tension we have three objects in view : (1) to relieve pain as rapidly as possible ; (2) to avert a fatal end ; (3) to prevent the recurrence of pain. The second object is attained when the pain is removed. The pain of angina varies much in duration ; generally it is short in the earlier stages, and abates on the cessation of the immediate cause—generally movement. But later it may last for several minutes, and sometimes for hours. Propyl, isobutyl, and amyl nitrites reduce tension in a few seconds ; sodium nitrite takes two to five minutes ; ethyl nitrite about the same ; nitroglycerine, forty seconds to two minutes. The inhalation of the fatty nitrites is thus obviously the most prompt remedy. The amyl nitrite in common use is a mixture of several nitrites, and should be replaced by a purer article, although the compound hitherto employed has been of the greatest service. An important point is the evanescent character of the nitrite action. When nitrites do good their influence soon ceases, as it does when they do harm, and there is no cumulative influence. Indeed, in some advanced cases the remedy fails from its evanescence, and then we may resort to one of the nitrites having a more durable action. Although he regards these medicines as of the highest value in relieving and warding off attacks, Leech does not look upon them as possessing reliable curative properties. No doubt if attacks can be prevented, recovery may take place ; or at any rate, pain being removed, life may be prolonged, and the vessel walls may gain some advantage in their continual contest with

the blood current. But it does not follow that the recoveries recorded after nitrites were caused by the drug. The use of the nitrites is but one element in the treatment. They should be accompanied by agents which improve the state of the vascular system, among which iodide of potassium and arsenic hold the first place.

With respect to dosage, Professor Leech directs attention to the minute quantities of the nitrites which affect the vascular system. An eighth of a grain of sodium nitrite, a fraction of a minim of ethyl nitrite, the sixteen-hundredth of a grain of nitroglycerine, will often affect the circulation. And yet, as a second point, considerable doses do not readily cause death. There seems to be no recorded case of death from ethyl or sodium nitrite. Amyl nitrite has been taken by the dessertspoonful, and yet recovery has taken place. In only a few instances has nitroglycerine been fatal.

Huchard publishes an abstract (*Gazette des Hôpitaux*; and the *Medical Chronicle*, p. 193, vol. xvii., No. 3, 1893) from his recently published work on the French treatment of angina pectoris. He first directs attention to the importance of distinguishing between true (coronary) angina and pseudo-angina. These two affections, associated by the presence in both of neuralgia of the cardiac nerves, are separated by the occurrence, in the true form only, of ischæmia of the myocardium. Huchard considers the treatment of angina pectoris under four heads:—

(1) *Preventive treatment*.—Here we must combat the tendency to high arterial tension, and attend to hygienic methods, particularly diet. Treatment must likewise be directed against aortitis and arterio-sclerosis by the use of milk, and of iodides and nitroglycerine. On account of the tendency of aortitis to narrow the coronary orifices, and thus to hamper the nutrition of the cardiac muscle, we must endeavour to diminish the work of the heart, attending especially to the peripheral vessels. Treatment to this end by means of the iodides is all important. The iodide of potassium is given in doses of fifteen grains three times daily. As loss of appetite, epigastric pain, and diarrhœa may arise, it is well to give the drug for twenty to twenty-five days only in each month, nitroglycerine in small doses being prescribed in the intervals.

(2) *Curative treatment of the attacks*.—Under this heading we may prescribe amyl nitrite by inhalation, or nitroglycerine in $\frac{1}{10}$ -grain doses, three or four times daily, for a period of seven or fourteen days. On account of the tendency of nitrite of sodium to change hæmoglobin into methæmoglobin, it is not looked upon

with favour. Morphine produces increased cardiac action and passive dilatation of peripheral arteries, with consequent lowering of pulse-tension, besides exerting a sedative and analgesic effect. By combining the nitrites with morphine good results are often obtained ; and if the nitrites fail, one-third of a grain of morphine hypodermically is of great value.

(3) With respect to the treatment of *complications*, renal insufficiency and cardio-sclerosis appear during the periods of freedom from anginal attacks. Cardiac dilatation or paresis and syncope are due to the influence of the attacks. Heart tonics, especially digitalis, are indicated in cardio-sclerosis and paresis. For renal insufficiency we must favour depuration of blood, and suppress all kinds of food liable to the formation of ptomaines. Caffeine, ether, or nitroglycerine, injected subcutaneously, is advised in syncope.

(4) Huchard refers, lastly, to useless or dangerous methods. Such are electricity, cocaine, bleeding, bromides, hypnotics, inhalations of oxygen, belladonna, and aconite. Angina being almost always of arterio-sclerotic origin, where the pulse-tension is already high, digitalis and ergot are contra-indicated, while sparteine and convallaria are useless. Caffeine and strophanthus may, in some cases, produce favourable results. Belladonna and bicarbonate of sodium are not only useless but harmful ; they are useless because the bicarbonate of sodium has no influence upon the pathological processes, and they may be harmful because the belladonna excites the cerebral centre of the pneumogastric and the intra-cardiac regulatory apparatus, and produces a contraction of the arteries ; in toxic doses only does atropine give rise to the opposite phenomena. Cocaine is dangerous in that it produces vaso-constriction and cerebral ischaemia, thus predisposing to syncope. Inhalations of oxygen are useless, and it is readily seen that they cannot act quickly enough to suppress an attack. Antipyrin and similar drugs, such as phenacetin and exalgin, have no favourable action upon the circulation ; and if it be true that they determine a dilatation of the cutaneous vessels and a contraction of the central arteries, they will be absolutely contra-indicated in the treatment of angina pectoris. As regards bromide of potassium, its efficacy has been exaggerated in angina due to the condition of the coronary arteries, when a daily dosage of sixty grains has not been exceeded. Larger doses may rapidly produce a slowing with weakening of the cardiac action, contraction of the smaller vessels, and elevation of the blood-pressure, and, in Huchard's experience, are without the good results claimed by others, especial objection being made to the association

of the three bromides. Briefly, therefore, we must combat pain, direct treatment alike against arterio-sclerosis—the development of which leads to degeneration of the cardiac tissue—and against lesions of the coronary arteries, and, above all, against cardiac ischæmia, which is the “chief and only danger” in this affection; and thus we should at a very early date, when signs of arterio-sclerosis appear, even in the absence of anginal symptoms, commence the iodide treatment.

Burney Yeo (*Practitioner*, p. 344, May, 1893), writing on the nature and treatment of angina pectoris, arrives at the following conclusions regarding the indications for the treatment of this affection: (1) To maintain or improve, when defective, the general nutrition; to avoid all strain, physical and emotional; and so to relieve cardiac feebleness and excessive effort. (2) To relieve dyspeptic conditions and flatulent or fæcal distension of the stomach and intestines. (3) To forbid the habitual consumption of agents which may exercise a toxic action on the heart, such as tea, coffee, tobacco, alcohol, etc., or that may introduce or develop toxins in the alimentary canal. (4) To avoid and remove all gouty and other blood contaminations. (5) To give such tonic remedies as may improve the cardiac tone and lessen existing tendencies to cardio-vascular degeneration. (6) To relieve the paroxysmal attacks by sedatives and stimulants.

(1) Anginal attacks occurring in persons who present signs of anæmia or wasting, and defective nutrition generally, must be encountered, in the first place, by careful attention to hygienic measures. Such patients must be removed from all causes of physical or mental strain. Their life must be one of complete repose of mind and body—a repose alternated with gentle physical exercise, always stopping short of the slightest fatigue. It is good for them, however, to be much in the open air, driving, sailing, or reclining, and in a mild climate, when possible, so that they shall be protected from the injurious effects of cold, exposure to which certainly favours the occurrence of these attacks, not only by lowering the nervous force, but by checking free cutaneous circulation and elimination. Much attention should be paid to their diet. It should be of the most nutritious nature, so far as is consistent with ease of digestion. An almost exclusive milk diet will be found to be of great service in many cases. When the digestive powers are greatly weakened, it may be necessary to have recourse to predigested foods, or to give with the food some artificial digestive agent, such as a trustworthy preparation of pepsin or pancreatin. A wineglassful of cream mixed with the same quantity of hot water, and a teaspoonful

of sal volatile added, is an excellent food on getting up in the morning. The lighter kinds of fish—soles, whiting, flounders, etc.—simply grilled, and eaten with a squeeze of lemon and plain uncooked butter, are excellent. Lightly boiled or poached eggs are permissible, if there is no gouty tendency; and also good consommé, flavoured with vegetables. The lean of fresh meat passed twice or three times through a mincing-machine, and then lightly cooked in a *bain-marie*, is most digestible and nourishing, and of great value when there is masticatory difficulty, as is so often the case. Fresh vegetables in the form of *purées* are useful, and so is the pulp of cooked fruits, as affording the necessary variety in the food and promoting the action of the bowels. Light milk puddings are also commendable. We should, moreover, see that a sufficient quantity of pure water is consumed, for eliminative as well as assimilative purposes; this is a point often overlooked, and the importance of a due ingestion of pure water as an indirect nutritive agent of the first consequence is too little insisted upon.

(2) The first indication cannot, however, be thoroughly carried out without due regard to the second—namely, to relieve dyspeptic conditions and flatulent and fæcal distension of the stomach and intestines. The coexistence of dyspeptic states must be treated in accordance with general principles. An alkaline bitter stomachic, composed of sodium bicarbonate, *nux vomica*, and *calumba*, an hour before the two principal meals, will be found valuable. Or, in other cases, a dose of diluted hydrochloric acid in compound infusion of orange-peel may be given after food, with or without the addition of a few grains of pepsin. Flatulent distension during digestion will often be effectually relieved by a pill containing a grain of thymol or a drop of creasote, taken directly after food. Regular evacuation of the bowels of fæcal accumulation is most essential, checking, as it does, the formation of injurious toxins in the intestines, eliminating waste substances, and relieving abdominal distension. For some persons the best aperient is a dinner pill containing a grain or two of aloes, $\frac{1}{2}$ grain of powdered *ipecacuanha*, a grain of *nux vomica* powder, and a grain of soap; this may be taken directly before or after dinner. Should such a pill prove insufficient, it may be followed occasionally by a teaspoonful of Carlsbad or Homburg salts, in half a tumblerful of hot water, the next morning. In cases where there is sluggishness of liver, with bile-stained conjunctivæ, a few grains of blue-pill, or $\frac{1}{6}$ or $\frac{1}{4}$ of a grain of podophyllin, at bedtime, with 2 or 3 grains of compound rhubarb pill, may take the place of the dinner pill.

(3) The next indication is also an important one ; for certain of the slighter forms of angina are no doubt dependent on, and the more serious forms may be provoked by, the habitual use of certain substances which come, in course of time, to exercise a toxic action on the heart. The action of these toxic agents is all the more subtle because they may be taken for many years without apparently producing any injurious effect, and it is often difficult to convince a patient that what he has so long done with impunity has at length become injurious. This is particularly the case with tobacco, the toxic effects of which on the heart are often delayed until, or even after, middle age, when they will perhaps somewhat suddenly make themselves felt. With regard to alcohol, it is singular to observe how in different individuals its toxic and degenerating influence will sometimes fall on one organ and sometimes on another. The cardio-vascular system in some persons is especially prone to undergo serious degenerative changes under its influence, while in others it almost entirely escapes, and hepatic and gastric troubles more especially arise, and in women the peripheral nervous system is most prone to be affected ; but whenever anginal symptoms arise, we should always insist either on complete abstinence from alcohol, or on its very sparing use in a very dilute form. Tea and coffee are often provocative of the slighter manifestations of cardiac pain and discomfort, and it is noteworthy that they are particularly prone to aggravate, or rather to be aggravated by, any emotional disturbance. All these toxic agents must be forbidden so long as any tendency to anginal attacks exists.

(4) The next indication is to remove and avoid all gouty and other blood contamination. The importance of elimination in the treatment of angina pectoris is universally admitted ; and although the author does not go so far as Ord, who is reported to have said "that if he were restricted to one remedy in the treatment of angina he would prefer sulphate of magnesium to nitroglycerine," he emphasises the importance of a free evacuation of waste products from the system. When renal elimination is defective from the coexistence of renal degeneration, we must act freely on the bowels and on the skin. When the kidneys are sound, the abundant use of pure water, or some suitable mineral water having some slight stimulating action on the kidneys, may avoid the necessity of purgation ; but in all cases a thorough daily evacuation of the bowels should be procured, and free action of the skin should be maintained by warm baths and frictions. In gouty cases, and in all cases of defective elimination, a careful and spare diet—sufficient, but avoiding all excess—should be prescribed.

Animal food should be taken only in great moderation, and fresh vegetables and fruit, carefully cooked and prepared so as to be made easy of digestion, should take its place. All alcoholic stimulants should be avoided; and when milk is not unacceptable to the patient, a few weeks of an exclusive milk diet may be advantageous.

(5) The appropriate treatment in the intervals—*i.e.*, of the constitutional condition underlying the paroxysmal attacks—next demands consideration. In anæmic cases, and cases of temporary cardiac debility from removable malnutrition, we shall find the milder preparations of iron, combined with small doses of digitalis, of great service. In other cases we shall find arsenic of greater value than iron; and here, again, there is a general consensus among experienced physicians as to the value of arsenic in the treatment of cases of angina pectoris in the intervals between the paroxysms. Balfour asserts that arsenic is “indispensable in all forms of weak heart accompanied by pain.” He advises that it should be given in the form of Fowler’s solution, 3 to 5 minims, combined with iron and strychnine, twice a day, after food. We cannot too strongly insist on the value of strychnine as a cardiac tonic, especially in remediable states of cardiac asthenia. In highly neurotic cases much benefit may be derived from a combination of iron or arsenic and potassium or sodium bromide, in 5- to 15-grain doses. In the same class of cases the valerianate of zinc is also of great service. It may be given in grain doses in a coated pill thrice daily, after food; and sometimes the combination of $\frac{1}{60}$ of a grain of phosphorus with it renders it a more valuable nerve tonic. He has already pointed out the usefulness of digitalis in the milder cases, and has seen long periods of immunity from attacks apparently brought about by occasional recourse to a mild iron tonic, with 5-minim doses of tincture of digitalis, or a pilule of Nativelle’s digitalin ($\frac{1}{100}$ grain). The idea of giving a combination of nitroglycerine and digitalis during the intervals is a concession to the vaso-motor hypothesis of the mode of causation of the attack to which the next section refers.

Iodide of potassium is another remedy that is of very great value in the treatment of angina pectoris, especially when it is associated with obvious signs of cardio-vascular degeneration and of the gouty state. It checks the progress of degenerative changes, it stimulates glandular organs and efficiently promotes elimination, and it appears also to prevent vaso-motor irritability; all these effects may depend on its eliminative properties. It is one of the most efficient anti-neuralgic agents in other forms of nerve pain. It may be given in 5- to 15-grain doses, three times a day.

In cases traceable to malarial intoxication, if arsenic fails to relieve, quinine should certainly be given; but in such cases evidence of arterio-sclerosis will usually be present, and will indicate the use of potassium iodide. It has recently been stated that cocaine, in doses of $\frac{1}{3}$ of a grain, thrice daily, has the power of entirely preventing attacks of angina. If further experience should prove the accuracy of this statement, it would go far to support the view that the anginal attack is dependent on a hyperæsthetic condition of the cardio-sensory nerves.

(6) The relief of the paroxysmal attacks has next to be considered. The use of the nitrites, such as nitrite of amyl, sodium nitrite, and nitroglycerine, which are known to have the power of relaxing the arterioles and so of lowering arterial tension, is advocated by some authorities. That these agents do relieve the paroxysm in many cases of angina is certain; that they do so wholly by their action as vaso-dilators is extremely doubtful. Douglas Powell states that he has found them "far more reliable in the graver cardiac cases than in the purer vaso-motory." Balfour and Grainger Stewart both believe that they act as direct analgesic agents, and that they have the power of relieving pain in other as well as in cardiac neuralgias, independently of their relaxing action on the bloodvessels; and this view Burney Yeo adopts as the most consistent with the clinical history of this disease.

Nitrite of amyl is best administered by inhalation. In some cases it entirely fails to relieve, although it may produce in a most marked form its characteristic effect of dilating the vessels. Nitroglycerine is preferred by others, and it has been pushed until very large doses have been taken—as much as 35 drops of a 1 per cent. solution have been given and repeated at short intervals during an attack, and 7 minims three times a day in the intervals. We should begin, however, with much smaller doses—1 or 2 minims of a 1 per cent. solution. Whitla recommends much smaller doses— $\frac{1}{1000}$ minim of nitroglycerine—very frequently, so as to maintain the effect and avoid the headaches which often follow the larger doses. The effect of sodium nitrite is said to be more lasting. It is given in tablets of $2\frac{1}{2}$ grains, one to four for a dose. At the outset of an attack we may give, in addition to the nitrite of amyl, about 30 minims of sulphuric ether, or a drachm of nitrous ether, with a drachm of sal volatile or a little brandy, in an ounce or two of peppermint water. If cold, the feet and hands may be placed in hot water. Balfour has been disappointed in the action of nitroglycerine. He prefers inhalations of nitrite of amyl; and when these fail—as they often will—he

resorts unhesitatingly to chloroform inhalations ; and he remarks that "so far from being unsafe in cardiac disease, it is often of the greatest use in these cases." Sulphuric ether is used also for the same purpose ; but, as Balfour says, "it is not rapid enough—chloroform acts more quickly, even more effectually, and is perfectly safe." He gives it poured on a sponge in a smelling bottle, and the patient is told to breathe it through his nose as deeply as possible. "In this way relief is obtained in a few seconds ; and so soon as the narcotic influence is produced, the smelling-bottle drops, and with it rolls away all risk of an overdose."

Recourse may have to be had to hypodermic injection of morphine in severe and protracted attacks. A sixth or a quarter of a grain may be injected. When it is given to relieve cardiac pain, there seems to be less risk of its causing cardiac depression. To counteract any such possible depression, it is a good plan to give some ether and ammonia mixture at the same time. The ethereal tinctures of valerian and castor have been found useful. Bromide of ethyl has been used in inhalation. A hot mustard poultice to the præcordial region may be useful at times ; a hot application to the region of the heart in anginal cases is a very popular remedy in the Vienna School. The application of the continuous electric current along the course of the vagus in the neck and down the arm, in cases where a distinctly painful aura is experienced in the hand, has been found useful in warding off attacks. Leeches applied over the sternal region, and repeated small bleedings from the arm, have also proved beneficial.

V.—TACHYCARDIA AND GRAVES'S DISEASE.

Rosenfeld (*Berlin. Klin. Wochenschrift*, No. 22, 1893) contributed to the Wiesbaden Congress notes on the treatment of attacks of tachycardia. In these attacks, healthy individuals are suddenly taken with a feeling of oppression on the chest, and the action of the heart is quickened—sometimes as much as 300 in the minute. Frequently the attack is a prolonged one—perhaps to five weeks ; often it lasts only a few minutes. Sometimes it disappears as suddenly as it came ; at other times unpleasant sensations are experienced. As a cause, neurotic states are often alleged, and there is no doubt they are actually present sometimes ; abuse of alcohol and coffee is likewise blamed. Overstrain of body or mind generally precedes them, especially in persons who are weakly. For the treatment of attacks, digitalis is much in use, as also are nitrite of amyl and nitroglycerine ; but very often they have little result. The attack

terminates mostly of its own accord; hence the recommendation of different remedies. Atropine and morphine are soothing, but not curative. Nothnagel advised deep inspirations. A patient of Rosenfeld's cut the seizure short by first allowing it to develop for a few minutes; then, lying down on the bed with the feet pressed against some resisting object, she took a deep inspiration, and, holding the breath, strained with the abdominal muscles and arms for sixty seconds, thus exerting pressure on the intra-thoracic contents. A peculiar feeling was experienced when the attack ended and pressure could be dispensed with. The countenance, at first bluish-red, soon recovers its colour. Four cases were treated in this manner with decided benefit.

The **Editor of the Medical Record** (p. 456, Oct. 15, 1892), in an article on tachycardia, gives a caution to distinguish the essential paroxysmal tachycardia, described by Bouveret, from that which is symptomatic. He says that in cardiac hypertrophy, especially that form which is found associated with chloro-anæmia, paroxysms of tachycardia are prone to occur; and while in the vast majority of heart affections such attacks are not among the prominent symptoms, care must be exercised to separate such symptomatic cases from the essential variety. This is not always an easy matter; and even after death, without microscopic examination, or even with it, affections of the ganglia of the heart, or the *nervi accelerantes*, or other changes in the myocardium, might pass unnoticed. Where there are plainly marked endocardial changes or valvular lesions, a tachycardia can be readily explained as due to reflex irritation.

Treatment is without much avail in most tachycardias, whether they be due to paralysis of the inhibitory fibres of the pneumogastric, to irritation of the accelerators of the sympathetic, or to reflex action from some lesion in the heart-wall or elsewhere. Morphine is probably the best remedy during the attack, given beneath the skin to ensure prompt action. Quinine, ergot, and *nux vomica* have been well spoken of in the intervals, and *digitalis* is almost always useful. **Brannan**, in an excellent paper read at the Academy of Medicine, says that caffeine, nitroglycerine, and nitrite of amyl have no effect. In essential tachycardia the most that can be accomplished is to secure all the freedom from nerve irritation and fatigue which is possible; and with this end in view stimulants and tobacco should be withheld. *Digitalis* will probably be found to yield most benefit, its form and dose depending on the requirements of the case. During the attack *digitalis*, owing to gastric intolerance, is best given hypodermically, or, as suggested by Huchard, by the rectum.

Kisch (*Brit. Med. Journal* Supplement, p. 21, Aug. 5, 1893) offers an explanation as follows for the occurrence of paroxysmal tachycardia at the menopause:—The stroma of the ovaries is, he says, then hypertrophied; this exercises an irritating effect on the nerve endings which traverse the stroma; and this effect is transmitted to the central nervous system, from which an irritative influence is produced on the sympathetic, accelerating the cardiac movements. **Trechsel** thinks that the explanation of paroxysmal tachycardia by reflex action should be adopted in every case. It has never been observed in children. The treatment most serviceable is the Playfair-Mitchell cure and hydrotherapeutics, with isolation. During the paroxysms complete repose, ice-bag to præcordial region, and stimulants, tapping the whole length of the vertebral column with the hand, and compression of the vagus nerve in the neck, have all been practised with temporary success.

W. H. Thomson (*New York Med. Journal*, June 3, 1893), in a paper which he read before the New York Neurological Society, narrated a case of Graves's disease in which satisfactory results were obtained by attention to diet. A change of diet effected what drugs had quite failed to do. First, return to a meat diet brought back a return of the disease, to be again unmistakably arrested by discontinuing meat and resuming milk; a second return to meat brought back a fatal return of the malady. Since this experience he has found that dietetic treatment has given such satisfactory results that he does not hesitate to say that a specific disorder of intestinal as distinguished from gastric digestion is a primary factor in the genesis of the affection. It is stated that in normal intestinal digestion the healthy system is constantly producing poisons, and we may therefore have specific disturbances either from an excessive formation of these poisons, or from a failure in the normal functions of the body which are protective against them. On this hypothesis the disorder would be a chemical one. Thomson considers that the fact that the disease is about ten times as common in women is in support of his theory, as digestive disorders are more frequent in women; also that diarrhœa sooner or later always makes its appearance in the course of this malady. Good fresh milk fermented every day, and known by its Turkish name of matzon, is the article of diet which he recommends in preference to all others. He considers that the medicinal treatment should begin with a mercurial purge, as blue pill, repeated occasionally. This he has found to be particularly useful against the diarrhœa. Then three or four times daily he prescribes the

following:—Five grains of equal parts of carbonate of bismuth and powdered calumba, with 4 grains of salol and 5 grains of benzoate of sodium. Or, again, he prescribes capsules of 10 grains of salicylate of bismuth, with 2 grains of beta-naphthol and 2 grains of ichthyol. These intestinal antiseptics are to be taken an hour after meals. He relies chiefly as a vaso-motor tonic on 10-drop doses of tincture of strophanthus, half an hour before meals.

E. D. Ferguson, of Troy (*Medical Record*, p. 760, June 17, 1893), regards strophanthus as by far the most useful remedy in exophthalmic goitre, though he by no means considers it as a specific. He has used it alone; also in combination with iron, arsenic, and strychnine. He prefers the tincture in 8- to 10-drop doses after meals. If no benefit is experienced in the course of a week, it should be increased 1 or 2 drops daily. No injurious effects have been noted in nearly 30 cases, though the dose has reached as high as 50 drops after each meal. The patient should be supplied with a large quantity of the tincture at the outset, so as not to have to change the preparation afterwards. On commencing with a new preparation it is advisable to start with a little below the maximum dose.

H. A. Hare believes we see much tachycardia, but little of true Graves's disease. In his hands strophanthus was of little use, and he had got better results with belladonna, nitroglycerine, and digitalis.

J. M. Anders prefers a combination of digitalis and strophanthus, especially in cases in which tachycardia is associated with arrhythmia.

Quine believes that much of the tachycardia we meet with is really immature Graves's disease. He prefers general sedatives, such as physostigma and gelsemium. Belladonna is uncertain and capricious; but viburnum and cannabis are often of great service.

J. J. Putnam, of Boston (*Medical Record*, p. 218, Aug. 12, 1893), reopens the question of thyroidectomy in the treatment of Graves's disease. He has analysed the reported cases from the following points of view: The immediate and remote effects of the operation (including the mortality rate after operation for goîtres in general); the influence of the character of the tumour on the result; the degree and persistence of the improvement in favourable cases; the character of the operation. Strong emotions are capable of causing temporarily most of the symptoms of Graves's disease. The reasonableness of the operation lies in the fact that in Graves's disease certain nervous centres are in a state of extreme irritability. Any means which will cut off a considerable

number of excitations from reaching the unstable centres is likely to be beneficial, by securing for them a partial physiological rest. There are various means, such as complete rest and the treatment of the naso-pharynx, which may do this in a measure ; but no one means is so effectual as thyroidectomy. The operation is, however, attended by a slight risk of death, and by a greater risk of considerable temporary prostration and laryngeal paresis.

Albert H. Freiberg, of Cincinnati (*Medical News*, p. 225, No. 9, Aug. 26, 1893), contributes a lengthy article on the surgical treatment of exophthalmic goître. He points out that when we consider the slight danger to life from the operation, if carried out according to the most improved principles, and when we consider the favourable results thus far obtained by surgical treatment, operative interference is indicated in cases of such severity as to seriously harass the patient, after other methods have failed to arrest the progress of the disease. In cases of the so-called "surgical" kind, or in any case in which the goître is of sufficient size to cause stenosis of the trachea or œsophagus, the indications for operation will be self-evident. However this may be, we can regard the operation for true Graves's disease as yet as only empirical. The operation at present almost exclusively performed is the extirpation of one-half of the gland, the larger half usually being chosen. The superior and inferior thyroid arteries are tied as a preliminary step, and the isthmus is divided between ligatures. Ligature of the thyroid arteries alone might well come up for consideration ; however, three cases only have been reported, one as being well, and the other two as improved. Total extirpation, practised as it was at first, is at the present day, of course, out of the question. Future experience may convert what is now an empirical procedure into one thoroughly rational.

DISEASES OF THE LUNGS AND ORGANS OF RESPIRATION.

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The following order will be observed in the consideration of the various modes of treatment of the diseases of the lungs and organs of respiration to which prominence has been given during the past year:—

- I. Asthma and bronchitis.
- II. Pneumonia.
- III. Pulmonary tuberculosis.
 - 1. Hygienic and constitutional treatment.
 - 2. Treatment by special remedies.
 - 3. Treatment of special symptoms.
- IV. Diseases of the pleura.

I.—ASTHMA AND BRONCHITIS.

In the Croonian Lectures on the Nitrites and allied compounds, **D. J. Leech** (*Brit. Med. Jour.*, 1893, ii., 112) discusses the use of these drugs in the treatment of pulmonary dyspnœa. His experience of their effect in asthma and bronchitis has not been so favourable as that of **Prof. Fraser** (*Trans. Ed. Med.-Chir. Soc.*, vol. vi.), but a large measure of relief in pulmonary dyspnœa is frequently afforded by them. In typical asthma complete and rapid relief is often obtained; yet in some cases hardly the slightest benefit arises. In dyspnœa with bronchitis, indicated by abundant sibilant and sonorous rhonchi, and also in asthmatic paroxysms, amelioration is at least the rule. Usually nitrites are well borne by dyspnœic patients, and if necessary as much as 1 drachm of a 2½ per cent. solution of ethyl nitrite may be given every ten minutes until 3 or 4 drachms have been administered. Sometimes sodium nitrite is better borne than ethyl nitrite, and sometimes the reverse is the case. Recent experience has shown

that ethyl nitrate in doses of from 5 to 10 minims is quite as efficacious as ethyl nitrite, and that its influence lasts longer. Amyl nitrite acts for too short a time to be of service.

The nitrites must not be looked upon as curative agents in bronchitis; they are often capable of relieving dyspnœa, and by dilating the vessels of the lungs they may possibly temporarily aid the right heart. But in the ordinary forms of bronchitis their regular administration is not usually very advantageous. They often fail even in the relief of dyspnœa, when the presence of abundant moist sounds indicates that the difficulty of breathing is due rather to accumulation of bronchial mucus than to spasm of the tubes or vessels.

W. Murray (*Lancet*, 1893, i., 406) speaks highly of arsenic in the treatment of certain cases of asthma. When a patient is suffering from this complaint the stomach is usually in a very disordered state. A preliminary course of the following mixture is given:—Tincture of stramonium, ʒij; carbonate of ammonia, ʒj; carbonate of soda, ʒiij; carbonate of magnesia, ʒj; rhubarb powder, gr. 25; chloroform, ℥ 20; peppermint water to ʒviij; half an ounce in as much water, to be taken three times a day. When a temporary lull in the complaint has been thus secured, the patient must at once be put upon a course of arsenic, taking care to give just as much as the stomach will bear, in order to keep the terminal (gastric) twigs of the pneumogastric in a favourable condition. By this means success is usually secured; the patient is not only relieved, but for the most part cured, by a three months' course of the drug. The author goes on to remark that in emphysema of the lungs, especially the atrophous form, no remedy acts so well as arsenic; in this condition, it is best to give one large dose of the liquor arsenici hydrochlorici in the forenoon, in combination with liquor strychniæ and hydrochloric acid.

Arsenic is especially useful in the asthma of children and of old emphysematous people. It is not of much service when bronchitis is present, nor where a plethoric or gouty state exists. It seems to act best where the nervous system is inherently defective, or where the wear and tear of worry or overwork have reduced its stability. Apart from all the predisposing and exciting causes of asthma, there remains at the bottom of most cases a nerve element which is best treated with arsenic.

G. Foy (*Med. Press*, 1893, i., 455) testifies to the value of euphorbia pilulifera in bronchial asthma. After a survey of the literature relating to this drug, he quotes the case of a man aged 35, who suffered from asthma, and had tried all the usual remedies without permanent good. During a very severe attack the tincture of

euphorbia pilulifera was prescribed in 20-minim doses every three hours; after the first four doses he felt much easier, and slept for eight hours. On waking he recommenced the tincture, and passed the day without a paroxysm; and after the twenty-fourth dose he felt confident of the cessation of the attacks. He had since been free from asthma for over a month, although daily engaged in business. (*See also "Year-Book" for 1893, p. 27.*)

The treatment of bronchiectasis by the intra-tracheal injection of menthol and guaiacol with olive oil is advocated by **T. Grainger Stewart** (*Brit. Med. Jour.*, 1893, i., 1,147), who relates a case in which speedy diminution and disappearance of the fetor of the sputa followed this method, together with improvement in all respects. The solution used consists of menthol, 10 parts; guaiacol, 2 parts; olive oil, 88 parts. Of this a drachm was injected into the trachea twice daily. He also gives the details of a case in which complete recovery followed the incision and drainage of a bronchiectatic cavity.

J. McNaught (*Brit. Med. Jour.*, 1893, i., 1,320) has adopted the former method of treatment with marked success in two cases. The first patient was a woman between fifty and sixty years of age, in whom bronchitis, accompanied by fever and profuse sweating, persisting after influenza, was associated with the expectoration of fetid sputa. After other remedies had been tried without benefit, an intra-laryngeal injection was given daily, consisting of 30 minims of the following solution:—Guaiacol, ʒjss; menthol, ʒx; olive oil, ʒviij; and iodoform and creasote, with croton chloral, were given in pill. After two or three injections the fetor almost ceased, and the amount of sputa was much lessened; and in a fortnight the former was gone, and the expectoration had also almost disappeared. In another case of bronchitis with suspected phthisis, the injections speedily lessened the expectoration and cough, and an almost incredibly rapid increase in weight occurred, together with an improvement in the general symptoms.

R. W. Wilcox (*Therap. Gazette*, June, 1893, p. 379) speaks highly of cocillana as an expectorant in bronchitis. With most remedies classed as expectorants, the expectorant effect is but an early stage of the emetic effect—as in the case of senega, squills, antimony, ipecacuanha, and apomorphine—the distance between the two effects being simply a matter of dosage, and varying with the individual. The ideal expectorant is one in which these two are most distant; and so far cocillana most nearly approaches the ideal. The preparation mostly used is the fluid extract, in doses of from 5 to 25 minims every three to six hours. A syrup has

also been produced which contains all the active principles of the bark, except those which are removed by precipitation by water from an alcoholic solution; the dose is from 1 to 2 drachms every four to six hours. The powdered bark when given produces nausea and a desire to vomit within about half an hour, lasting an hour, accompanied by an early discharge of mucus, and followed by dryness of the throat. With large doses there is a desire to defecate, due to the resinoids contained in the bark.

The effect of the drug is to stimulate the glands and vessels, especially those of the mucous membrane of the bronchial tubes and of the digestive system, as shown by increased secretion, lasting for several hours. Cocillana is therefore indicated where hyperæmia exists unaccompanied by secretion, as in acute bronchitis, subacute and chronic dry bronchitis, and chronic disease of the pulmonary tissue. The drug requires from three to six hours in which to act as an expectorant; and its effect when once established persists for from four to six hours. Cases of acute bronchitis seen within the first forty-eight hours are more quickly relieved by apomorphine; but at a later period cocillana is to be preferred. In chronic bronchitis the drug is of greater service than either apomorphine or ipecacuanha. In senile bronchitis it is contraindicated, as it may add to the bronchorrhœa to a dangerous extent. (See also "Year-Book of Treatment" for 1891, p. 34, sect. viii.)

In an article on cough in bronchiectasis, H. D. Didama (*Journal of the American Med. Assoc.*, March 18, 1893) gives the following example of a simple method of favouring the evacuation of the dilated bronchial tubes by the action of gravity. A woman aged thirty-five had suffered from bronchial catarrh for a year and a half. The cough became paroxysmal, occurring several times a day in violent fits, which lasted from one to three hours, almost without remission, and during the paroxysms a large quantity of most fetid expectoration was brought up. The patient was instructed in the *rationale* of the treatment, and was made to lie on the bed with one hand on the floor and the head almost reaching to the hand, so that the dilated tube would be inverted, and the fluid contained in it would almost run out of itself, and would thus be easily coughed up. This inversion was practised four or five times a day, in order to anticipate the reaccumulation of the secretion. The result was very satisfactory. In five minutes the pocket could be emptied more completely than when the patient had formerly "coughed her head off" for an hour or longer. The fetor disappeared from the sputa, vomiting and diarrhœa ceased, and the patient's health much improved.

In a lecture on the diagnosis and treatment of basic pulmonary cavities, **Sidney Coupland** (*Lancet*, 1892, ii., 869) relates an instructive case illustrating the difficulties met with in determining from physical signs the exact condition of the lung. The patient was a girl eighteen years of age, with marked signs of cavity at the left base; and the diagnosis of bronchiectasis, and therefore multiple cavities, was made. In discussing the probable course of such a case, the author points out that it is conceivable that under the influence of antiseptic inhalations to correct the fetor and arrest putrefaction, a generous diet, and tonic remedies, the local disturbance may abate, the cavity shrink, and for a time at least no trouble be given. On the other hand, a patient with a basic cavity containing foul gas is in danger of incurring septic broncho-pneumonia, from inhalation of some of the putrefying material into the other parts of the same lung, or even into the opposite lung; this is a very real and constant danger, and not uncommonly leads to gangrene of the organ. Or the local mischief may extend by ulceration of the walls of the cavity, and thus lead to gangrene. Surgical interference for the drainage of such a cavity would give vent to the foul discharge, and thus not only obviate the risks of secondary inflammation, but also facilitate the contraction of the cavity. As regards the prospect of permanent good from such an operation, much depends on whether the cavity be single or multiple; and it is unfortunate in this regard that bronchiectases are usually multiple. If single, bronchiectatic cavities may be cured by drainage; when multiple, surgical interference offers but small chance of relief. The sequel of the case under discussion brings home forcibly the dangers attending the administration of anæsthetics in operations upon the thorax. The patient took chloroform badly, vomiting and coughing much, and ejecting a quantity of very foul sputa. Pearce Gould passed a trocar into the lung over a spot where the amphoric breathing had been most intense, but no pus escaped; and as some hæmoptysis and cough followed the last puncture, and the patient was becoming cyanosed, any further operation was abandoned. Next day coarse bubbling râles were heard over the dull area, while the breath sounds were less markedly amphoric. A week after the operation, it was evident that an abscess was forming at the site of puncture, probably from leakage of pus from the lung, and another operation was therefore determined upon. The patient took chloroform better than on the previous occasion, but it was necessary to place her upon the sound side to allow the surgeon to operate. The abscess was evacuated; and a cavity in the lung having been found by the use of a grooved needle, a portion of rib

was excised, and the cavity was about to be laid open when the patient became suddenly livid and sweated profusely. In spite of active restorative measures, she never rallied, and died twenty minutes after the operation was suspended. At the autopsy, it was found that the opening through the excised rib led into a dilated bronchus, one of several saccular bronchiectases which occupied a great part of the left lower lobe. The largest cavity did not exceed a bean in size; and it is an instructive fact that physical signs of such intensity should have been yielded by a congeries of dilated saccules of comparatively small size and of irregular shape.

II.—PNEUMONIA.

The treatment of this condition has received considerable attention. It will be observed that while there is a general consensus of opinion against the routine use of antipyretic drugs in pneumonia, authorities vary much as to the value of the external application of cold, especially in the form of the ice-bag. Contradictory opinions are also expressed upon various other points, such as the use of alcohol, digitalis, and purgatives; in fact, such divergencies as are to be expected in the case of a disease which, in a large proportion of instances, has a natural tendency to a favourable termination after an acute stage of somewhat uncertain length. It is especially difficult to estimate the value of remedial measures in the case of croupous pneumonia occurring in children, who as a rule make a good recovery under purely expectant treatment.

An interesting discussion on the diagnosis and treatment of acute croupous pneumonia in children was introduced by Goodhart at the annual meeting of the British Medical Association at Nottingham (*Brit. Med. Journal*, 1893, i., 782). Goodhart did not hold with the active constitutional treatment of this disease. In very acute cases in older children sometimes a leech or two would give great relief. After a free use of antipyretics, he now ordered them only very occasionally; they reduced the temperature without any amelioration of the symptoms or the course of the disease. The value of the local application of warmth was difficult to decide. In a series of cases treated with the hot pack, the temperature invariably rose rapidly in the pack, sometimes to almost a hyperpyrexial point. For some years Goodhart had discarded poultices in favour of packs, either hot or cold, and a light cotton-wool jacket. For four years he had applied an ice-bag to the chest, as advised by

Lees. This was a valuable method, and might safely be adopted in all but the youngest children. Of 18 cases (not all children) success might be claimed in 8; in 7 who did well it was doubtful if the treatment had any real effect; and in 3 young children some collapse was produced, which subsided after removal of the ice-bag. Goodhart was not inclined to attribute collapse to the application of the cold over the heart, as the same method had been used in the treatment of pericarditis without any ill effect. Alcohol should be administered only as needed, by the thimbleful, well diluted.

Henry Ashby held that there was no way of cutting short or aborting the disease. Nevertheless he habitually used aconite and acetate of ammonia in the early stage, with the object of acting on the skin. Dover's powder or its fluid equivalent was of service if a sedative was needed. Digitalis and ammonia were also useful, as was alcohol if the circulation showed signs of flagging. When fever ran high, the best local application was an ice-bag kept in contact with the chest wall by a flannel bandage. Ashby had used the graduated bath with considerable success, but it needed care, as alarming depression was easily induced. Where much lung was involved, the inhalation of oxygen was often of service as a temporary restorative.

C. N. Gwynne did not consider that the ice treatment could ever be adopted as a routine; it required constant medical supervision, and there was danger of rigors or collapse. Antifebrin was valuable when the temperature rose high and there was great restlessness. Digitalis was most useful in many cases; it slowed the pulse and respiration, and often lowered the fever. Alcohol was generally unnecessary, and often harmful. As a diet, peptonised milk food was to be recommended.

D. B. Lees spoke only of the local treatment of pneumonia by the ice-bag. He claimed that this reduced temperature, diminished physical signs, relieved pain, was pleasant to the patient, and, when used with reasonable precautions, was perfectly safe. It was now beginning to be allowed that the external application of ice was the best and most effectual antipyretic, and much safer than any drug. But besides, marked diminution of physical signs had often occurred under its influence. The effect in relieving pain was often very striking. The question of safety was simply one of efficient nursing; if the temperature were taken hourly, the ice-bag being removed at 100° and replaced at 102°, collapse would not be produced. In addition, warm fomentations to the lower limbs and a hot bottle to the feet were very useful, as also were vaso-motor dilators, such as alcohol in hot

water, with or without nitroglycerine. Lastly, the failure of the ice-bag treatment was sometimes due to its too limited application, as frequently two or even three ice-bags were necessary.

More Madden, from his experience during twenty years in the Children's Hospital, Dublin, regarded pneumonia as generally a complication of typhoidal fever. He relied on quinine or antipyrin in combination with small doses of grey powder, a milk diet, and, when alcohol was needed, as was usually the case, either brandy or whisky. An envelope of warm poultices should be applied as long as any consolidation remained; and the inhalation of a terebinth vapour or steam and turpentine was beneficial.

Mackenzie referred to the fact that many patients recovered without any medicinal treatment whatever.

Mansel Sympton reserved alcohol for the period of crisis and collapse. Digitalis should then be given as a general heart stimulant, as the failure was not entirely on the right side.

Freer related a case in which antifebrin had proved distinctly disadvantageous; while **J. W. Smith** stated that he had obtained benefit from this drug in an analogous instance.

King attached great value to the use of the ice-bag, applied, not directly, but over two layers of flannel, and intermittently, according to the effect produced. The local abstraction of blood by leeches was also very useful.

Lewis Marshall held that there was no specific for pneumonia, and that a mere depression of the fever was not desirable; he touched upon the abuse of heart tonics and alcohol in the early stages of the disease.

Samuel West also was of opinion that there was no known antidote for pneumonia. Three symptoms were of prime importance: temperature, dyspnœa and cyanosis, and cardiac failure. Fever did not require active treatment unless it was excessive. Antipyretic drugs were of doubtful value; baths and packs had their uses, but also their abuses. Of the ice-bag he could not speak so enthusiastically as **Lees**. A simple and good method of cooling fever patients was the "air-bath," the patient being only lightly covered, or placed naked under a cradle with a sheet over it. The dyspnœa and cyanosis were largely mechanical, and associated with distension and probably consequent paralytic failure of the right heart; for this there was but one means of relief—free venesection. Copious bleeding in cases such as described had saved many lives; but the instances in which it was indicated were not common. Cardiac failure was recognised as one of the chief dangers of pneumonia, but this was not necessarily and only a failure of the right heart from

over-distension ; the poison generated in the fever might, as in other specific fevers, affect the heart-tissue itself, and thus lead to muscular failure of the heart as a whole. Here it was that alcohol came in ; its indiscriminate use was harmful, but for cardiac asthenia it was essential. Among heart tonics a high place was to be assigned to caffeine, administered either by the mouth or subcutaneously.

T. J. Mays contributes (*Lancet*, 1893, ii., 85) a collective report on the treatment of pneumonia by the external application of ice—a report founded on the details of fifty cases so treated by medical men whom he had invited by circular to record their experience. He comments on the following points :—

(1) The resolving power of ice on the exudation. This is a marked feature, and must be regarded as one of the strongest factors in its curative influence. This is probably due in part to the effect of cold in causing contraction of the bloodvessels, and thus giving tone to the vessels and checking exudation from them. But there is often reason for believing that the exudation present in the alveoli is also dissolved ; for there may be an area in which there is absence of respiratory murmur, and presence of a flat percussion note and bronchial breathing, indicating that the process has passed beyond the stage of engorgement into that in which the exudation has filled the alveoli ; yet the application of ice will in a remarkably short time develop a new group of physical signs, such as crepitation, reappearance of the respiratory murmur, and diminution of flatness of percussion note. This has also been dwelt on by **Lees** (*Lancet*, November 2, 1889).

(2) Influence on symptoms. The pain, difficult respiration, cough, and expectoration are remarkably relieved, and the temperature is often lowered two or three degrees in half a day. A very agreeable effect is thus produced, which often makes the ice acceptable to those who at first protest against its use.

(3) There is no evidence that the ice has been in any way injurious, although in some cases it was kept applied for a fortnight.

(4) The ages of the patients varied from six and a half months to seventy-four years.

(5) The results are good. Out of the fifty cases only two were fatal—equal to a death-rate of 4 per cent. Adding to these fifty cases a series of 106 treated similarly by **Fieandt** (*Lancet*, 1892, ii., 279) with only three deaths—or a death-rate of 2·82 per cent.—and the death-rate upon the total 156 cases is only 3·20 per cent. The author concludes that if results so satisfactory are maintained, it is needless to say that a pronounced

advance in the therapeutics of acute pneumonia will have been made.

J. A. Larrabee (*Therap. Gazette*, July 15, 1893) contributed to the section of Diseases of Children of the American Medical Association, June, 1893, an able paper upon the therapeutics of croupous pneumonia.

If heart failure threatens from distension of the right ventricle, this may be met (1) by agents which determine the blood to the skin. The warm pack, applied at a temperature of 98.5° F., and protected by light woollens, envelopes the body in an atmosphere of steam. By this means the peripheral nerves are soothed, and almost always quiet sleep follows. (2) By belladonna, which has a place in all hyperpyrexias accompanied by paleness of skin and in low stages of fever. It is an indirect cardiac stimulant, diminishing blood-pressure by dilating the capillaries; and it is also a stimulant to the respiratory centres, while its comparative harmlessness in children enables it to be pushed to its toxic effect. It has done Larrabee yeoman's service in many an apparently hopeless case of cardiac failure in pneumonia. (3) By nitroglycerine and the nitrites, which take the pressure off the heart and flush the skin when the overfilled right heart is brought nearly to a standstill. Digitalis is not a satisfactory remedy; veratrum viride is safer. Alcohol will often prove very useful, by dilating the capillaries as well as acting as a respiratory stimulant.

With regard to local applications, heat is a stimulant and cold a sedative; and warm applications are to be preferred. A towel may be wrung out of hot water, wrapped once or twice round the chest, and covered with oil silk.

Purgatives during the stage of hepatisation are injurious; they seem to add to the general depression when the child is ill able to withstand it. If necessary, the bowels should be moved by simple enemata.

The enthusiasm for the treatment of high temperatures has in a large measure subsided, and it may now be said that the thermometer is less likely to plunge us into therapeutic errors than formerly. It is very rare to find a high temperature which does not yield to the warm pack or to the "tubing coils" known as the author's invention. The antipyretic drugs of the coal-tar series must be used with caution. The cerebral symptoms often met with in the pneumonia of children are best met by the warm bath or pack and the tubing-cap to the head; and relief, reduction of temperature, and quiet sleep almost always follow.

A. Jacobi (*Arch. of Pædiatrics*, April, 1893) discusses the

therapeutics of pneumonia in children. With regard to high temperature, this is not so important where there is a morning remission. The routine practice of lowering all temperatures of 103° F. is bad; and phenacetin, antipyrin, and acetanilide have oftener reduced temperature than saved life. In all cases with remissions quinine is of great value, given during the remission.

The best antipyretic is cold. Most cases do well if sponged with cold water or rubbed with wet towels; but when the extremities are cold while the interior is very hot, no cold applications should be used; a hot bath, given at once, restores the circulation to the surface, and the temperature falls. Weak delicate anæmic children also do not stand the cold bath; for them the bath should be warm or tepid, or the warm pack may be used.

If heart failure threatens, stimulants are needed; and the author states that "all demand them at some time"—an assertion that many observers will be disposed to question. Digitalis is often useful, a large dose of from 1 to 4 grains being given, and repeated once or more times as needed; in this way the action of the drug is obtained in a few hours. When the peripheral circulation fails and the pulse is small and weak, digitalis must be combined with some drug such as nitroglycerine ($\frac{1}{500}$ to $\frac{1}{100}$ grain), sodium nitrite ($\frac{1}{10}$ to $\frac{1}{4}$ grain), or tincture of aconite (one minim every hour or two hours till the pulse revives). When the pulse is good, but the surface is dusky and the nails are blue, the nitrites will help to restore the circulation. Leeching and the hot mustard bath may also be used. Strychnine ($\frac{1}{30}$ grain in twenty-four hours to a child of one year) is also useful, as is carbonate of ammonia.

The warm poultice or jacket of cotton wool is of service during the stage of hepatisation. Pleural pain is best relieved by sinapisms, and constant hacking cough by small doses of opium.

Jacobi's recommendation of aconite in the treatment of a failing heart will probably excite some surprise.

Sero-therapeutics in pneumonia has received attention during the year. H. Audeoud (*Rev. Méd. de la Suisse Rom.*, Feb., 1893; *Brit. Med. Journal Suppl.*, 1893, i., 39) points out that the doctrine of immunisation has been extended and applied to fibrinous pneumonia. Just as in animals tetanus can be prevented, and even cured, by the injection of the serum of other animals vaccinated against this disease—this process forming the basis of sero-therapeutics—so it is possible to confer on rabbits immunity from the diplococcus of pneumonia, and to cure by means of the blood and the organic secretions of vaccinated animals other rabbits infected with the pneumococcus and suffering from fibrinous

pneumonia. **MM. Klemperer** first ascertained by experiments on themselves that the normal system can tolerate with impunity, and without local or general reaction, injections of the serum of animals rendered refractory to the diplococcus, and then gave injections of 4 to 6 c.c. of serum to six pneumonia patients. In every case after six to eleven hours a considerable fall of temperature occurred, with slowing of the pulse and respiration; and twice the temperature did not rise again. In ten other cases the results were excellent. **Foà** and **Scaria** have also hastened the crisis in four pneumonia patients out of ten injected subcutaneously with the blood-serum of immunised animals. The amount used was from 5 to 7 c.c., introduced under the skin of the back. **Janson** has also adopted the same treatment in ten cases of pneumonia. Five times the injection was followed by a short delay of the crisis (fourth, fifth, fifth, sixth, sixth day); three times a temporary fall of temperature took place; once improvement occurred, but the patient died later; and once the result was *nil*. The object sought is the anticipation of the crisis which ought to terminate the attack. **Netter** considers the crisis to be due to a rapid and marked attenuation of the pneumococcus. Daily cultures and repeated inoculations with the pulmonary secretions or the saliva of pneumonia patients have given to **Patella** and **Netter** positive results during the time of the disease, and negative after the crisis. It is to this remarkable change in the virulence of the pneumococcus that **Netter** attributes the cure of pneumonia. By the accumulation of their products of secretion the soil in which the microbes develop is after a time modified. They give rise at first to a pneumotoxin, and later to another substance—anti-pneumotoxin—which has the property of neutralising the former. Thus it is through the anti-pneumotoxin contained in the blood of an immunised animal that the cure of the pneumococcus infection is brought about. In the blood-serum of patients with fibrinous pneumonia both pneumotoxin and anti-pneumotoxin are found—the former especially during the febrile stage of the illness, the latter after the crisis; but up to that period of the disease it has been forming and accumulating. Normal blood has been shown experimentally to have no such effect when injected in equal quantity into a pneumonia patient.

M. A. Strizover (*Meditz. Oboz.*, Nos. 15 and 16, 1892; *Brit. Med. Journal Suppl.*, 1892, ii., 104) fully endorses the statements of **Petrescu** respecting the abortive treatment of pneumonia by large doses of digitalis. On the day following the administration of the drug the temperature falls from 40° C. to 38°, and the patient feels practically well. In cases in the incipient stage the

lungs become free from abnormal signs in a day or two, while in more advanced cases resolution occurs about the seventh day. In no instance were any toxic symptoms produced.

Lazzaro (*Arch. di Farmac. e Terap.*, June 15, 1893) also considers that digitalis is of much service in pneumonia, and is of opinion that it acts by strengthening the systole of the heart, and thus enabling it to overcome the obstacle to the circulation in the congested lung. In support of this view the author tried two drugs having a similar action—strophanthus and adonis—both of which act more promptly than digitalis, and are better tolerated. In one case $1\frac{1}{2}$ gramme of tincture of strophanthus was given daily, and in the other 6 grammes of adonis as an infusion; in both the disease ended in three or four days. Lazzaro considers that digitalis and the other cardiac tonics should not be administered in pneumonia as a matter of routine, but should be reserved for cases in which heart failure threatens.

Bellotti, writing on the same subject (*Gazz. degli Ospit.*, July 22, 1893), draws the following conclusions from a large number of patients. All cases of fibrinous pneumonia are much benefited by large doses of infusion of digitalis, accompanied by a milk diet, and occasionally by bleeding. It is necessary to give digitalis in very large doses, because the usual presence of gastric catarrh and the diminution of the hydrochloric acid of the gastric juice greatly reduce the amount of the drug that actually passes into the portal circulation. Some of the active principles of digitalis seem to exercise a special elective action upon the toxin of pneumonia. (See also "Year-Book" for 1893, p. 31.)

Valten (*Sem. Méd.*, March 29, 1893) states that a large dose of iodide of potassium, given in the first six to eleven hours following the initial rigor of fibrinous pneumonia, brings about rapidly a crisis or lysis of the fever, often within twelve hours. The smallest effectual dose is about 6 grammes, and this should be given once, twice, or several times within a few hours. The local phenomena, however, persist for as long as in cases not thus treated. The drug may also be useful if commenced between the eleventh and the twenty-fourth hour from the onset, the temperature being reduced almost to normal, to rise again however the next day, when a second dose of 6 grammes arrests the fever. After the first twenty-four hours no good result is obtained from the administration of the iodide.

Issaëff (*Ann. de l'Inst.-Pasteur*, March, 1893) divides the theories explaining the acquired immunity from the pneumococcus into the following:—The bactericide theory, according to which the humours and the serum of the vaccinated organism hinder the

development of the bacterium, which consequently perishes ; the theory of attenuation, which supposes that the bacterium does not lose its power of growing in the vaccinated animal, but loses its pathogenic power in contact with the vaccinated humours, and becomes inoffensive ; and the antitoxin theory, which attributes the acquired immunity to the power of the serum of vaccinated animals to neutralise the toxin formed by the pneumococcus. After criticising these views, he draws from his own observations the following deductions :—Pneumotoxins excite a more marked reaction in vaccinated animals than in others. The serum of vaccinated rabbits, though it possesses undoubted therapeutic powers, has no antitoxic action ; neither does it attenuate the virulence of the pneumococcus. The pneumococcus grown on the serum of vaccinated animals does not lose its power of producing toxins. The pneumococcus inoculated into a vaccinated rabbit keeps its pathogenic properties for about eighteen hours, and its vitality for about forty-eight hours. Phagocytosis plays an important part in the immunity displayed by vaccinated animals.

III.—PULMONARY TUBERCULOSIS.

In this section there is to be recognised a gradually increasing tendency to distrust specific theories of treatment—a natural reaction from the failure of tuberculin. It will be seen, however, that evidence is again adduced in support of the utility of this substance in pulmonary phthisis ; but after the undoubted harm resulting from its former use it is probable that the majority of observers will await further proof of its value. Creasote and guaiacol still hold a foremost place, but the testimony in their favour is by no means universal ; and most authorities incline to the view that they do not exercise any truly specific influence upon tuberculosis. The surgical treatment of pulmonary phthisis by resection of lung is a new departure that will be watched with much interest.

1. Hygienic and constitutional treatment.

A valuable contribution to the climatology of pulmonary disorders is made by **C. T. Williams** in the Lumleian lectures on "Aëro-Therapeutics in Lung Disease" (*Brit. Med. Journal*, 1893, i., 566, 621, 681). The author points out that the chief factors of a climate are—latitude, as determining the amount and intensity of sunshine ; altitude, which may to some extent neutralise the effects of latitude as regards temperature ; the relative distribution of land and water, especially the presence of vast tracts of either desert or ocean, the former accentuating extremes of

temperature and the latter tempering them; the presence of ocean currents; the proximity of mountain ranges, with their influence on wind and rainfall; the degree of permeability of the soil; the rainfall; and the nature of the prevailing winds. The elements of a climate are—temperature, hygrometry, atmospheric pressure, wind force, and atmospheric electricity.

In considering the influence of climate on lung disease, allusion is made to the immunity from consumption with which some climates have been credited. The localities stated to possess immunity vary so greatly in climatic conditions—some being of high altitude, some below sea-level, some with tropical heat, and some intensely cold—that it is impossible to discover any common qualities possessed by them.

From the point of view of aëro-therapeutics, *warm* climates may be divided into warm moist climates, and warm dry. Of the former, the best type is Madeira, which formerly was the *beau idéal* for pulmonary disease. The winter is warm and the summer cool, the difference between their mean temperatures being only 9° F. There are no cold winds, and only an occasional hot wind. The nocturnal radiation is slight. The relative humidity percentage is large, and the rainy days are numerous. The principle of sending patients to Madeira was to keep them in an equable temperature, in a sort of aërial warm bath, which soothed the respiratory passages and promoted expectoration; permitting also of much sitting and lying out of doors. Unfortunately this soft atmosphere has often an injurious effect upon the general health, inducing languor, loss of appetite, and even diarrhœa, and apparently promoting progress of the tuberculous disease. Of sixty-three consumptives who spent one or more winters on the island, 53·01 per cent. improved, 14·28 per cent. remained stationary, and 31·91 deteriorated; and this unsatisfactory result was arrived at although 63 per cent. were free from cavity and had a favourable outlook. However, many of the “improved” class improved greatly, and several of the excavation cases also showed signs of contracting cavity. Of twenty carefully-selected phthisical patients sent by the Brompton Hospital to Madeira for one winter, only three improved, one died, and the rest returned to England worse than when they left.

The climate of Madeira is most beneficial in catarrhal phthisis.

Chronic bronchitis with emphysema, bronchial catarrh, and pulmonary congestion in elderly persons unconnected with heart disease, are also wonderfully relieved by it. Bronchial asthma often does well in Madeira, especially when associated with much catarrh. In short, it may be said that most improvement may be

expected where catarrh is the most prominent symptom—whether in asthma, in phthisis, or in bronchial inflammation.

The Canary Islands, including Teneriffe and Grand Canary, have a climate similar to Madeira, but somewhat warmer and drier. The great advantage which Teneriffe offers is the variety of sites for residence at different altitudes—from the sea-level to 12,200 feet at the Peak. The author has seen great benefit in cases of asthma and chronic bronchitis, but the few patients with phthisis sent to the Canary Islands have not prospered.

The type of warm dry climates is that of the deserts, such as occur in the centre of Australia, in Gobi in Chinese Tartary, the great deserts of the United States, and the tract stretching from the Great Sahara through Arabia into Persia, of which the Egyptian desert is a part. Egypt will serve as an example. The chief features of its climate are warmth, marked difference between night and day temperatures owing to radiation, dryness of atmosphere, and great atmospheric purity. According to Zagiell's observations, while ordinary atmospheric air contains 4 parts of CO_2 in 10,000, the air of the desert contains none at all, and putrefaction appears checked; meat exposed to the air becomes mummified in three weeks without a trace of decomposition, and wounds heal rapidly. The very hot winds, such as the sand-laden *khamisin*, are a drawback.

Egypt has a most beneficial influence in phthisis, provided that the area of lung affected is not excessive, and there is no fever. Of 26 consumptives who passed one or more winters there, the average previous duration of phthisis was 36.65 months; family predisposition existed in 17, and hæmoptysis had occurred in 18. Cavities existed in 9, and in 6 the disease was bilateral. The general results were:—Improved, 65 per cent.; stationary, 11 per cent.; worse, 23 per cent. The local results were:—Arrest in 1, decrease of disease in 10, no change in 3, advance of disease in 4, advance and extension in 3, extension alone in 3.

The dry climate suits asthma remarkably well; in chronic bronchitis the cough diminishes, and expectoration rapidly lessens, and at last ceases altogether; while emphysema does well, on account of the dry warm air and the level country. Apart from phthisis, the conditions that have done best are chronic pneumonia and chronic dry pleurisy, bronchitis and chronic rheumatism. To profit by the climate, patients should live in the desert, by ascending the Nile, or residing at Luxor, or even at the Mena Hotel at the foot of the Pyramids, as Cairo has all the disadvantages of a large city.

The Riviera owes its warm winter and spring climate to the following factors :—Its southern latitude, its protection from cold winds by mountain ranges, and the warming and equalising influence of the Mediterranean Sea. Its winter climate is clear and bright, with considerable wind, but free from fog or mist ; the mean temperature is 8° to 10° higher than that of England ; and there are half the number of rainy days, and four or five times the number of bright ones. The results in 210 phthisical patients (149 men, 61 women) who passed one or more winters in this district may be summarised as follows :—Family predisposition was present in 55·6 per cent., and hæmoptysis in 59 per cent. ; the average previous duration of tuberculosis was 26·2 months. Excavation was present in 41 per cent., and the disease was bilateral in 36 per cent. The average length of residence was nine months. The *general* results were :—Improved, 65·23 per cent. (6 cured) ; stationary, 10 per cent. ; worse, 25 per cent. The *local* results were :—Arrest of disease, 6 per cent. ; improvement, 37 per cent. ; stationary, 18 per cent. ; worse, 45 per cent. This total cannot be considered very satisfactory ; but many patients may be found who have not only recovered, but struck root on the Riviera ; and even when the climate does not arrest disease, it may prolong life for many years. The conditions that do best are :—Chronic bronchitis and emphysema ; chronic pneumonia, with or without bronchiectasis ; bronchial asthma ; phthisis in which inflammatory attacks have been the predisposing cause of the disease ; scrofulous phthisis ; unilateral first-stage disease, which improves far more than bilateral phthisis, tuberculisation cases generally doing better than cavity cases. The Riviera is contra-indicated in all cases, phthisical or non-phthisical, where any degree of fever is present, as its stimulating character tends to increase the febrile disturbance.

Southern California has a warm dry climate, which somewhat resembles that of the Riviera, but is warmer and more equable ; its characteristics are due to three factors : its southern latitude ; its protection from cold northerly and easterly winds by mountain ranges ; and the influence of the Pacific, and especially of the warm Kuro Siwo current. The portion fitted for health stations is the western part fringing the coast, where are situated Los Angeles, Pasadena, and Sierra Madre ; and on the coast itself, Santa Monica, Santa Barbara, and San Diego. Also in North California is Monterey, on the Pacific, a well-equipped station. The strong point of the climate is its equability, in which it surpasses Egypt and the Riviera ; for in South California a patient can live with comfort all the year round. It is moister

than its neighbours Arizona, Utah, and Colorado, but by no means damp ; and it allows of an open-air life.

The best example of a *moist* climate is that of the ocean, as obtained by sea voyages. Here moisture is combined with a saline atmosphere, and in many cases with a well-graduated rise and fall in diurnal temperature. For phthisical patients the best voyage climatologically is that to Australia or New Zealand, on account of its length ; and especially if a clipper be chosen instead of a steamer. The best route is round the Cape of Good Hope. It may be said of sea voyages in general that, if the weather is fine, and the patient is therefore able to be much on deck, the circumstances are very favourable, as under no other conditions can he obtain so much fresh air ; but if the weather is rough, and he is consequently confined to his small ill-ventilated cabin, the reverse is the case. It is important to time the voyage so that the arrival, either in Australia or in England, takes place in warm weather. As far as the Cape the influence is sedative, the cough being reduced and the nervous system quieted ; while between the Cape and Australia the voyage has a tonic effect, when appetite is improved and weight gained.

The other winter voyages made by invalids are those to the West Indies by the Royal Mail steamers, and the Brazilian voyage. The former is too mild to be bracing ; while the latter, lasting two or three months, affords a pleasant intermingling of temperate with tropical climates.

Very different in its effect on consumptive patients is the voyage to India and Australia through the Suez Canal and the Red Sea. The heat is intense, and the consequent depression great ; and the result in the case of those weakened by chronic disease is often disastrous, diarrhoea being not uncommonly induced, with great languor and sweating. It is no unheard-of thing for a phthisical patient returning from Australia to die from the great heat in the Red Sea. There is a further danger in the transition to the comparatively cool atmosphere of the Mediterranean. This not infrequently produces temporary albuminuria even in the healthy.

The statistics of the effects of sea voyages are derived from 65 cases of phthisis. The majority took the Australian or New Zealand voyage, and went and returned in clippers round the Cape. The *general* results were : Cure in 3 cases, great improvement in 21, improvement in 26, making a total percentage of 77 improved ; 1 stationary, and 14 (22 per cent.) worse. Improvement occurred in 43·75 per cent. of the cases in which excavation existed. Appetite, colour, and strength improved, and, above all,

weight increased. The *local* results were: Arrest of disease in 5; decrease in 31; no change in 7; deterioration in 22, or 34 per cent. Cases without cavity showed 58·54 per cent. improved; those with cavity 50 per cent. The Australian voyage gave the best results.

A voyage may be recommended in the following conditions: Chronic pleurisy and chronic empyema; chronic bronchitis; scrofulous phthisis; hæmorrhagic phthisis; tuberculous excavation, where the cavity is limited and the disease unilateral.

The effects of barometric pressure in relation to lung disease are considered under the two opposite conditions of increase of pressure and diminution of pressure.

For the application of compressed air two forms of apparatus have been devised. One consists of a tightly fitting mask connected with a cylinder containing the compressed air. This is not so good as the second—the compressed air bath, for which somewhat complicated apparatus is needed. For therapeutic purposes the pressure seldom exceeds ten pounds, or two-thirds of an atmosphere, and the increase and decrease are made at the rate of one pound in three minutes.

The effects of compressed air in lung disease have been found to be as follows: In 15 cases of bronchial asthma, 7 of which were largely complicated with emphysema, the average number of baths taken was twelve to fifteen. Of these, 12 patients improved and 3 did not; 9 gained weight and 2 lost. In 7 cases in which the thorax was measured the circumference increased in 4 and diminished in 3. The spirometer showed an increase of 25 to 33 per cent. in three cases in which it was used. The baths seem to have a sedative effect on the pulmonary plexuses of nerves and the pneumogastric; the attacks become less severe, and after a course of twenty or thirty baths the interval between them is much longer. In no case was a complete cure effected, but in several the patient remained free from asthma for months, and in one instance for years. The effect on the paroxysm is immediate and most striking, and patients have expressed the wish that they could live in the bath. Emphysema was reduced, as shown by auscultation and percussion.

In chronic bronchitis and emphysema the result is satisfactory; cough and expectoration diminish, breathing is easier, and weight is gained; but the great feature is the reduction of the emphysema, as shown by the return of the various displaced organs to their normal position; while measurements show a lessening of the circumference of the chest varying from an inch to an inch and a

half. Of 33 patients, with an average of eighteen baths, 15 were measured, and of these 11 decreased in circumference and 4 increased; in 26 there was general improvement, 5 did not improve, and 2 died—one of heart failure from cardiac dilatation after five baths, and the other from capillary bronchitis after great improvement from nine baths.

The result in phthisis is not altogether favourable. In 9 cases weight was gained and cough and expectoration lessened, and apparently respiration became freer in the unaffected portions of the lungs; but in 2 patients the baths seemed to bring on hæmoptysis; and in 4 this complication set in during treatment, although it could not be distinctly traced to it. The only improvement seemed to be the opening up of unused portions of lung; and there was no evidence of the truth of the assertion that the compressed-air treatment promotes the absorption of consolidations or infiltrations, or of serous exudation in acute pleurisy; while it appeared to have no effect in expanding a lung after the removal of the compressing pleuritic effusion.

One condition remains for consideration—decrease of pressure. The climate of high-altitude sanatoria necessarily varies with height, latitude, and position with reference to shelter, wind, and rainfall; but in addition to rarefaction of atmosphere, a constant feature is diathermancy, or the property of transmitting radiant heat, which causes an increase between sun and shade temperatures of 1° F. for every rise of 235 feet. This is perhaps the most striking feature of mountain climates. High altitudes are stated to be aseptic; and this is true as long as there is no cause of pollution; but where there are large aggregations of human beings or of horses or cattle, septic organisms are present.

The physiological effects of mountain climates are very striking. The heart-rate is at first quickened, and the impulse becomes stronger; but after a time the pulse-rate drops to slower than normal. The respiration, at first quickened, also falls below the normal rate after six or eight weeks. Breathing becomes deeper, inspiration longer, expiration more complete. Coincidentally there is an enlargement of the thorax, causing an increase in circumference of from one to three inches at different levels; and the mobility of the chest walls is also increased. This is due to the greater physiological activity of the lungs owing to the rarefaction of the atmosphere; for the enlargement is most marked in those who take much exercise, and is not always permanent—the thorax sometimes returning to its former size after residence at sea-level. Mountain races are on the whole wonderfully free

from disease, especially from tuberculosis ; but this is due to their avoidance of overcrowding, indoor life, and insufficient dietary ; for in the presence of these no altitude would give immunity.

The following statistics are derived from 247 cases of phthisis sent to winter in high-altitude sanatoria, of which 183 were males, and 64 were females ; the average age for the former was twenty-eight years, and for the latter twenty-five. The average length of illness before climatic treatment was 23·89 months ; family predisposition was present in 40 per cent., and hæmoptysis in 45 per cent. The patients were, as a rule, free from pyrexia, which is aggravated by high altitude. The first-stage cases formed 65 per cent. of the whole, and softening and excavation existed in 35 per cent. The disease was bilateral in 37 per cent. The majority of the patients passed an average of ten months, or two winters, at high altitudes—these including Davos, Arosa, St. Moritz, Maloja, Wiesen, the South African Highlands, Colorado, and New Mexico. The *general* results were : cure in 40·89 per cent., great improvement in 29·55 per cent., improvement in 12·95 per cent., making a total of 83·40 per cent., against 5 cases unaltered, and 14·57 per cent. deteriorated (of which 19·43 per cent. died). The *local* results were as follows :—Arrest in 42·85 per cent. (by this is meant disappearance of all physical signs in first-stage cases ; in softening and excavation cases, disappearance of cavernous sounds, and even of signs of consolidation, nothing remaining but deficiency of expansion, some hard breathing over the whole side, and tubular breathing or prolonged expiration above the scapula ; and in contracted cavity cases, some flattening and immobility of side, with hyper-resonance and prolonged respiratory sound) ; partial arrest in 26·83 per cent. ; decrease in 5·71 per cent., making a total of 75·39 per cent. improved ; while in 5·5 per cent. the disease remained stationary, and in 19·18 per cent. it advanced. Among the first-stage cases arrest occurred in 57·23 per cent., partial arrest in 26·78 per cent., and decrease in 6, making the large total of 90 per cent. improved. The most surprising feature is the large proportion of absolute arrests, which were not only far more numerous than in other climatic results, but also more complete. In second- and third-stage cases arrest occurred in 16 per cent., partial arrest in 29 per cent., and decrease in 8, making a total of 53 per cent. of improvement.

The results in these high-altitude cases seem to warrant the following conclusions :—

1. Enlargement of the thorax occurs, unless opposed by the growth of fibrosis or by extensive pleuritic adhesions.

2. Males and females seem to do equally well, and profit most between the ages of twenty and thirty—males over thirty and females under twenty benefiting least.

3. The climate is specially beneficial in hæmorrhagic and in hereditary cases, and appears in the latter class to exhibit a distinctly counteracting influence on the development of phthisis.

4. It is most effective in cases of recent date, though of utility in those of long standing; and to ensure its full benefit a stay of at least six months, and in many cases two years, is desirable.

5. The climate produces great improvement in 75 per cent. of cases of phthisis generally, and in 43 per cent. it causes more or less complete arrest of the tuberculous process.

One important question is often asked:—When can patients in whom arrest has occurred return to low levels, or can they never do so? Judging by the above cases, which were chiefly treated at Davos and St. Moritz, relapse is comparatively rare, only 20 cases of relapse after leaving the mountains having occurred out of the 91 arrests.

High-altitude stations may be divided as follows:—

1. Alpine resorts. The stations of the Grisons, St. Moritz (6,000 ft.), Davos (5,200 ft.), Wiesen (4,771 ft.), are all suitable for winter and summer residence, except that when the snow melts invalids must go to a lower level for at least a month. The winter climate is cold, with sufficient sunshine to allow of sitting out of doors, and it is free from winds and fogs. Patients can sleep with open windows in mid-winter.

2. South Africa. The mountain stations are situated in the Cape Colony, the Orange Free State, and the Transvaal, at an altitude of from 4,000 to 5,000 ft., the country being prairie at a high level. Taking Bloemfontein as a type, the climate is warm, seldom cold even in winter, and delicate persons can sleep in the open nearly all the year round.

3. Colorado and the Rocky Mountains. The altitude of the whole of Colorado and New Mexico varies from 5,000 to 11,000 ft., and in the Rocky Mountains is as high as 14,000. There are three series of elevations suitable for invalids:—(a) The prairie plain east of the Rockies, 5,000 to 6,000 ft. high, in which are situated Denver, Boulder, Manitou, and Colorado springs. (b) The lower range of the Rockies, from 6,000 to 7,000 ft. high, with their valleys. (c) The great natural parks at an elevation of from 7,000 to 10,000 ft., surrounded by mountains, and sheltered from winds. These appear to be the beds of ancient lakes. North, Middle, South, and San Luis Parks are all of

vast extent. Considering the elevation, the climate is remarkably mild, and it is very dry. The sun shines for an average of 330 days in the year. The winters are clear and bright, with scarcely any snow. Compared with Alpine sanatoria, Colorado offers the advantage of having no snow-melting season, and of allowing residence all the year round in a somewhat warmer and drier climate; but it has the drawbacks of wind and dust, most troublesome in summer, and as yet has not produced such favourable statistics as the former. A great attraction to many is that it offers a prospect of profitable occupation, whether professional or commercial.

In the following table the results of different climates in phthisis are summarised. It will be seen that high altitudes come out best throughout.

	Number of Patients.	Average Length of Residence.	First Stage.	Second and Third Stages.	Bilateral Affection.	Results.						
						General.			Local.			
						Improved.	Stationary.	Worse.	Arrest.	Improved, in- cluding Arrest.	Stationary.	Worse.
		Mths.	%	%	%	%	%	%	%	%	%	%
High Altitudes	247	12·2	65	35	37	83·4	2·02	14·57	42·5	75·5	5·3	19·1
Sea Voyages	65	(Ave. of Voyage.) 1·6	63	37	37	77	—	21·56	7·7	53·3	10·7	33·8
Riviera . . .	210	9·	59	41	36	65·2	10·00	24·80	5·9	36·6	17·8	45·6
Home Climates	292	9·7	58	42	42	63·7	8·21	28·00	2·0	38·9	20·0	41·1

High-altitude climates are also beneficial in the following conditions:—Imperfect thoracic and pulmonary development; chronic pneumonia without bronchiectasis; chronic pleurisy where the lung has not expanded after removal of the fluid; bronchial asthma without emphysema.

- High altitude is contra-indicated in:—
1. Phthisis with double cavities.
 2. Fibroid phthisis, and all cases where the pulmonary area at sea level hardly suffices for respiratory purposes.
 3. Catarrhal and laryngeal phthisis.
 4. Acute phthisis of all kinds, and especially where there is great irritability of the nervous system.

5. Phthisis with pyrexia, and pyrexial cases generally.
6. Emphysema.
7. Chronic bronchitis and bronchiectasis.
8. Diseases of the heart and great vessels, unless functional ; diseases of the liver and the kidneys, including all forms of albuminuria (Andrew Clark).
9. Diseases of the brain and spinal cord, and conditions of hypersensibility of the nervous system.
10. Anæmia.
11. In patients of advanced age, or too feeble to take exercise.

In an article on the climate of Australia, the **British Medical Journal** (1892, ii., 1,128) points out the advantages of many health-resorts in that country for consumptives. It cannot be too clearly recognised that it is folly to send pulmonary cases to Australia in a routine and inconsiderate manner. The climate of the Australian continent is very variable in its different parts. That of Sydney is damp and depressing, and the heat of summer is well-nigh unbearable. Melbourne is subject to most violent and sudden changes in temperature, and Hobart is so also in a less degree. Some parts of the interior, especially along the Murray River, are well suited to a certain small class of consumptives ; although the summer heat is great, the climate is fairly equable, and the dryness of the atmosphere is very advantageous to the phthisical. But this up-country life is only suited to the young and vigorous, with a good reserve of physical force, and not without some financial resources also ; for lodgings are rough, food bad and hastily cooked, and house-rent very high. Still, a winter on the Murray will prove attractive and health-restoring to the well-to-do and fairly vigorous *poitrinaire*, but not to the advanced consumptive. Mount Lofty, in South Australia, and Mount Macedon, in Victoria, are also places of resort that can be recommended, where there are some chances of meeting with the comforts of civilisation. Medical men in England have not yet emancipated themselves from the old routine prescription for consumption—"a sea voyage"—fraught, as it so often is when inconsiderately prescribed, with suffering and death ; and as a sea voyage must end somewhere, Australia is sometimes prescribed in the same routine fashion.

P. C. de Wit, of Cradock, Cape Colony (*Brit. Med. Journ.*, 1893, i., 1,348), also repeats the oft-given caution against the practice of sending consumptives long distances from home without due regard to their condition. As Cradock is one of the towns believed to possess extraordinary curative powers, owing

to its elevated situation and dry Karroo climate, he is in a position to see a considerable number of the unhappy people who are thus sent out. Often they are spending their little all in the vain hope of bringing about that cure which has been prophesied. Advanced cases drag out a dreary existence for a few months, away from all relatives and friends, without comfort, and full of mental worry. Observation shows that cases, however early, in which there is constant evening rise of temperature, are not definitely benefited by the climate of the Cape. Those which do improve are early cases of consolidation, without fever and chronic pneumonia. Asthma and chronic bronchitis are also undoubtedly relieved. No advanced case should ever be sent from home unless the patient can afford every comfort, and even then the benefit is so problematical that it is probably not worth the attendant anxiety and trouble.

G. V. Perez (*Brit. Med. Journal*, 1892, ii., 744) speaks highly of Orotava as a health-resort in phthisis. Orotava is situated in the island of Teneriffe, the largest of the Canary group. The accommodation for invalids has recently been much improved, and intending visitors have now a choice of several first-class lines of steamers, which make the passage from Southampton or Plymouth in from four and a half to six days. A cheaper route is from Liverpool, a return ticket from this port, available for one year, costing £15. In the valley of Orotava the ground rises at first with a gentle slope, and, after attaining an elevation of 2,000 feet, shoots up rapidly to the Cordillera, a range which here averages from 7,000 to 9,000 feet in height. On the east and west two high ridges, fully ten miles apart, descend from the Cordillera towards the sea. The amphitheatre thus protected opens on the northern side to the Atlantic. The north-east or "trade" breezes begin to blow some hours after sunrise, and cease before sunset, when they are replaced by the southern land breeze. During the heat of the day the upper parts of the island are generally cloud-capped; and invalids can remain out of doors when the heat would otherwise drive them in. The nights are mild, and the climate is very equable. From May to August there is no rain; and in the wet season the rainfall is very small—the average for ten years being only 13 inches, against nearly 30 in Madeira. The average number of rainy days in Orotava is fifty-one. The difference between the temperature of the coldest and the warmest month is only 14° F.; and the mean temperature during the winter (November to March) is 63·8° F.; that of Madeira being 61·7°; that of Nice 49·6°, and that of London 41·7°. During the winter there is between two and three times as much sunshine at Orotava as

in Jersey, and more than ten times as much as in London. The soil is very porous, and no damp remains on the surface; and there is hardly a day in the year in which an invalid cannot be in the open air.

Patients in the first and second stages of pulmonary tuberculosis can here live in the open air all day, and sleep with open windows with less risk than anywhere else. They can stay on into June, and may even pass the summer without inconvenience. Many such patients lose their acute symptoms, and gradually pass into the chronic stage. Bronchial cases do extremely well in Orotava.

The claims of Ilfracombe as a health-resort are urged by **J. B. Sincock** (*Brit. Med. Journ.*, 1893, i., 939). On comparison with Scarborough, Brighton, Ventnor, Falmouth, and Guernsey, Ilfracombe is shown by statistics for ten years, compiled by Bayard, to be warmer in winter than any other watering-place in England, and only 0.5° lower than Guernsey. Again, the summer temperature is lower than in any other of the above places except Scarborough. As regards rainfall, rainy days, and amount of cloud, Ilfracombe holds a medium position. It would seem that a very large portion of the Gulf Stream current passes along the north coast of Devon and Cornwall, and that well-sheltered spots like Ilfracombe reap the full benefit of its warmth in winter and coolness in summer; while in places more exposed, such as Bude, cold winds neutralise these advantages to some extent.

2. Treatment by special remedies.

A review of the present treatment of pulmonary tuberculosis in France is given by **T. Linn**, of Nice (*Internat. Med. Magazine*, September, 1893, p. 732). Since the discovery of the bacillus, war has been made upon it, and the results are far from encouraging—the “bacillicide” treatment often seeming to hurt the patient more than the bacilli. **Professor Grancher** is trying anti-tubercular vaccination on animals, but there seems too much danger in the method to justify its employment upon man. Already the injections of goat and dog serum have been abandoned. Excellent results are secured by the old-fashioned treatment by cod-liver oil, alternating with hypophosphites and arsenic in summer time. Some of the tar products retain favour, while cough, sweating, and other symptoms are met with the usual remedies. **Professor Germain Sée** is in the habit of giving capsules of oleic acid internally, each containing eight grains, and one is taken thrice daily. He also at present advises his “treatment of phthisis by artificial atmospheres under pressure.” He holds that ordinary inhalations cannot reach the surface of the

bronchial mucous membrane. Only condensed gases can pass into the smaller bronchial ramifications, and they must be composed of substances that would volatilise there. To this end small rooms are filled with creasote vapour under pressure—this medication, according to Professor Sée, having a true antiseptic action and preventing the multiplication of the bacilli. The patient is put into a metallic room, formed of a round sheet-iron cylinder, about four yards square inside, and looking outside like a vertical steam-boiler, and furnished with every comfort. Compressed air, charged with creasote and eucalyptol, is allowed to enter slowly. The pressure used is half an atmosphere. The air is first saturated with the drugs by passing through solutions in large glass bottles, and then enters the room at a rate varying from 15 to 20 cubic mètres an hour for a space measuring 5 cubic mètres. The treatment usually lasts two hours; but the patient may stay in the room three or four hours a day if desired.

As to open-air treatment, many physicians recommend the system; but there are not as yet in France any large institutions like that of Falkenstein. A sanitarium of the kind is, however, now being erected on the Revard Mountain over Aix-les-Bains. Besides this, for the past five years experiments have been going on in France to determine the curative action of ozone in tubercular patients who are anæmic. This gas, if pure, does not produce any ill effects. Desnos, of the Charity Hospital, Paris, has used it with excellent results, as the patients rapidly regained all the appearances of good health; in a few weeks weight increased from ten to twelve pounds, and oxyhæmoglobin increased from 6 per cent. up to 10 per cent. A large establishment has now been erected at St. Raphael, a small place between Hyères and Cannes, and fitted up with all the latest apparatus for the production of ozone in large quantities by means of electrical machines. Ozone is a powerful germicide; and even if its action on the bacillus is not yet proved, there is no doubt of its wonderful power to overcome the anæmia which is so constant in pulmonary tuberculosis. Following this example, many “aérium” establishments have been founded in the various health resorts of the South of France for the treatment of phthisis by ozone, and by compressed air saturated with creasote and eucalyptol.

The hypodermic method of administration of creasote is much advocated in France; but it is not considered that the drug should be given in all cases of phthisis. Those in the first and second stages are selected; and the greatest success is obtained where the fever is either absent or very slight, and the progress

of the malady is slow. As creasote is eliminated by the broncho-pulmonary tract with an increase of congestion, or hyperæmia, it should not be used when inflammatory or congestive states exist, or where fever, renal troubles, or hæmoptysis are present.

In conclusion, it may be stated that the opinion in France respecting the creasote treatment is that it is the best method which at present exists to prevent the multiplication of the bacilli. There is considered to be no doubt that a modification of the chronic inflammation of the broncho-pulmonary mucous membrane follows its use; and even if it prevents the invasion of the bacilli rather than destroys them, it is regarded as the best modern means with which to counteract tuberculosis.

F. Semon (*Lancet*, 1893, i., 525) considers that, though the constitutional treatment of tuberculosis by large doses of creasote cannot claim in any way a specific effect, yet it can be positively stated that as a symptomatic treatment it excels every other form at present known. The patients gain in weight, their appetite improves, night-sweats diminish, expectoration becomes less purulent, and in many cases, especially if not too far advanced, the disease appears to be actually arrested. It is only rarely that patients cannot digest the large doses of the drug. But it is absolutely necessary that the creasote should be perfectly pure, and that it should be taken immediately after meals.

A. Albu (*Berl. Klin. Woch.*, Dec. 19, 1892) gives the results of the use of creasote in the Moabit Hospital, Berlin, during more than five years. The dose has been increased until 30 grains or more have been taken daily. The drug is given in pill. Some patients took as much as 450 grammes of pure creasote in a few months, and most stood the large doses well. They were in all stages of phthisis, but especially the initial. Among the numerous cases treated, none were seen in which the number of bacilli was permanently diminished; and laboratory experiments have shown that creasote does not even lessen the virulence of the bacillus. Hence the author is not able to recognise that any specific influence is exercised upon the disease. Under large doses, while many patients improve, others become worse; and sometimes cavities form and amyloid degeneration occurs. The same improvement met with under creasote is also seen in patients who have had nothing but expectorants and narcotics, with good diet and general hygiene. A large number of such comparative observations were made, and those not treated with creasote often showed greater and more rapid improvement. This was probably due, not to any injurious influence of the creasote, but to the individual peculiarities and

fluctuations so characteristic of phthisis. One patient was in hospital three times: the first time he was treated with tuberculin, the second by the expectant method, and the third by creasote in large doses. Each time he gained from ten to twelve pounds in six to eight weeks, which he had lost while away.

Albu holds that creasote has no effect upon the tuberculous process in the lung, but considers it a useful remedy in phthisis, perhaps the best at present known. For most patients it is a good expectorant, for many a stomachic; often it acts as a tonic; but it does not cure the disease.

J. T. Whittaker (*Therap. Gazette*, July, 1893, p. 438) gives an exhaustive survey of the history of the use of creasote in pulmonary tuberculosis, and sums up with the following conclusions:—

1. When pure, creasote is harmless.
2. It has no direct action upon the tubercle bacillus.
3. Tuberculosis pulmonum is chiefly a secondary infection by a streptococcus.
4. Creasote has no direct action upon this streptococcus; hence none whatever upon hectic fever.
5. It destroys lower organisms, especially those which produce fermentation, without affecting the process of digestion.
6. Hence the virtue of creasote, which is undeniable in most cases, is chiefly, but not wholly, due to its influence upon nutrition.

Observations have been made by **T. Guida** (*Rif. Med.*, Oct. 25, 1892) upon the effect of rectal injections of creasote in various tubercular affections of children. The drug was given as an emulsion with almond and olive oil and yolk of egg, or in a solution with alcohol and water. Commencing with a dose of 25 milligrammes, it was gradually increased to a maximum of $\frac{1}{2}$ to 1 gramme of creasote in twenty-four hours. In every case great irritability of the mucous membrane of the rectum was produced, followed after a time by dysenteric symptoms.

D. M. Reese (*Internat. Med. Mag.*, Feb., 1893, p. 28) gives an exhaustive summary of the effects of the treatment of pulmonary tuberculosis by guaiacol. The observations were made upon 101 cases in Professor Osler's clinic—66 of whom were out-patients, and 35 in-patients. The guaiacol was prescribed as follows:—Beginning with one minim three times a day (with sufficient alcohol for solution, and 2 drachms of compound tincture of gentian), the dose was increased every fourth day, until the quantity taken was from 10 to 15 minims.

Of the 66 out-patients, 35 had extensive disease with softening

at one apex or base, 31 had only slight disease at one or other apex. The results may be summarised thus :—In the first group of 35 cases, cough and expectoration were lessened materially in 8 ; general nutrition was slightly improved in 5. In the others there was no change. Of the second series of 31 cases, in 10 cough and expectoration were lessened, body-weight improved, fever lessened, and appetite increased.

Among the 35 ward patients, 5 out of 19 tolerably advanced cases showed slight and transient improvement. In 16 instances with more moderate disease, lessening of cough and expectoration occurred, with increase in weight and strength, and improvement in the general condition. In a few cases night-sweats became less frequent. The influence upon the expectoration was variable. In four early cases the amount was greatly reduced, and the character changed from muco-purulent to mucoid ; in these cases, too, the physical signs became less marked ; in only one, however, did the bacilli disappear from the sputum.

In three of the ward cases the guaiacol was used hypodermically (a 10-minim injection daily), a method which has been strongly urged as having an important influence in reducing the fever. Two of these had rapid consolidation with high evening and low morning temperatures. The third case presented only slight disease at one apex. In none was the temperature lowered more than one degree an hour after the injection ; and subsequently it always rose to its previous limit. In one the cough and expectoration were markedly influenced by the injections, and the sputum decreased from 425 c.c. daily to 200 c.c. a week after the injections were begun.

The following conclusions are drawn from this series of cases. Practically, guaiacol appears to have no definite effect upon the temperature, pulse, or respiration ; nor does it seem to check the sweats. In a number of cases, however, cough and expectoration lessened during its use. In a few instances the physical signs improved ; but there is no evidence that the remedy had special influence upon the bacilli. In early cases the general nutrition is benefited and the appetite improves. Guaiacol has this important advantage over creasote—it is less liable to produce gastric disturbance. In no instance of the series did it seem in any way to interfere with digestion.

Turia (*Gazz. degli Osp.*, Oct. 1, 1892) reports unfavourably of the effects of hypodermic injections of guaiacol and iodoform in pulmonary tuberculosis. The purest guaiacol was used in oil of sweet almonds. Of 18 cases, 7 were in an advanced stage, while in the remaining 11 the disease was incipient or not far advanced.

Of the former, 3 died, 2 remained stationary, one became rapidly worse, and the remaining one had much improved at the end of a month's treatment, although he returned in three months as bad as ever. Of the 11 earlier cases, real improvement took place in 3, one of whom, however, died two months later of rapid tuberculosis. In one of the other cases the treatment had to be stopped, on account of hæmoptysis. In the remaining cases no benefit resulted. In several instances rise of temperature took place after a few injections. In all cases in which cough and expectoration were present, the amount of sputum was much increased, but the number of bacilli was unaltered. The sputum largely consisted of saliva; a few minutes after the injection the taste of guaiacol was noticed in the mouth, and profuse salivation was caused. When daily doses of 20 centigrammes and upwards of iodoform were given, a considerable amount of albumen was found in the urine; and in three cases serious hæmoptysis set in. Guaiacol, on the other hand, which the author claims to have used in larger doses than had previously been reached, was well borne, as long as the dose did not exceed 15 c.c. of a solution containing 3 grammes of the drug for each injection. In larger doses violent cough was induced, which sometimes caused vomiting and marked prostration. The author concludes that guaiacol is useless in advanced cases, and is practically of little or no advantage even in the incipient stage of tuberculosis.

Peter (*Rev. de Bibliographie Méd.*, Feb. 10, 1893) mentions an instance of the occurrence of fatal fat embolism in phthisis, owing to the hypodermic injection of a solution of guaiacol in oil. The amount which was injected was from 30 to 50 minims daily. After the treatment had been continued for some time, it had to be temporarily suspended owing to the onset of congestion of the right lung. About a week later another injection caused intense dyspnœa, marked cyanosis, coma, and death. At the autopsy a large amount of oil was found in the blood. Great care should therefore be taken that the injection is not made into a bloodvessel.

Some investigations upon the absorption of guaiacol have been made by **Poggi** (*Brit. Med. Journ. Suppl.*, 1892, ii., 67). His conclusions are as follows:—(1) That guaiacol given by the digestive tract is in great part absorbed. (2) That greater absorption takes place in the healthy than in the tuberculous. In healthy people a dose of 1 gramme was almost completely absorbed, and the drug could hardly be detected in the fæces. (3) A sufficient dose is 1 gramme daily, this amount being completely absorbed. (4) That guaiacol given daily in such doses is well borne, and

produces neither nausea nor sense of weight in the stomach. (5) That the drug is excreted in the urine, not as guaiacol, but as a body giving with bromide water the reaction of phenol.

C. O. Reuteln and H. Arronet (*St. Petersb. Med. Woch.*, 1893, No. 18, s. 161; in *American Journal of Med. Sciences*, Sept., 1893, p. 334) give the results obtained during the past five years at Poguljanka from the use of kumiss and creasote in pulmonary phthisis. The kumiss was used as a table beverage, from six to fifteen half-bottles daily, about two-thirds being taken in the morning. The contra-indications are the occurrence of hæmoptysis and the existence of arterial sclerosis. The creasote was given in doses increasing from 25 to 75 grains a day; if not well borne by the stomach, it was administered by enema with olive oil. Of nearly 300 patients under observation, in incipient phthisis one-half were cured, one-third relieved, only one-fifth remained stationary, and no case was made worse; in chronic cases nearly one-half were improved, nearly as many remained stationary, and about 5 per cent. became worse, none being cured. Of the first class, those patients treated by kumiss alone showed a greater percentage of improvement than where creasote was also administered. In none of the chronic cases did the physical signs become worse.

Tuberculin still finds its advocates. Karl von Ruck, of Ashville, N.C., reports (*Therap. Gazette*, June, 1893, p. 369) the later history of a series of 25 cases of pulmonary tuberculosis treated with the injections two years previously. The excellent results obtained are practically unique in the history of this remedy. The cases were first recorded in 1891 (*Therap. Gazette*, June 15, 1891). Of 5 cases with one or both upper lobes involved, but without softening, and with comparatively good general health, all were at that time improved; and all have now made a recovery, no relapse having occurred in two years. Of 7 cases with more extensive disease or moderate destructive processes, but still in a fair condition, 4 were then apparently cured, 2 greatly improved, and 1 improved; of these 7 cases, 6 have now made a final recovery, while 1 relapsed and is again improved. Of the remaining 13 cases, which were still further advanced in local disease, with considerable constitutional disturbance, but still in a condition justifying some hope of improvement, 4 were then greatly, 6 moderately, and 1 slightly improved; 2 had not improved; and at the present time 6 are still alive, 3 of whom have continued greatly improved and 3 others improved, while 7 have died.

This gives for the early stage 100 per cent. of recoveries, and

for the middle stage 86 per cent. of recoveries and 14 per cent. of improvements, without a death in two years. It must be admitted that these results have never been obtained by any other mode of treatment. For instance, in 1890 (*Medical News*, Sept. 13) the author reported 81 early-stage cases, similar to those in the first two groups above described, with a percentage of only 24 recoveries and 21 improvements; and in a more advanced stage, of 434 cases treated, only 9 per cent. recovered and 11 per cent. improved. The favourable climate and the correct general management of the cases were common to both series; the special factor in the former was the tuberculin.

The result—so different from that obtained by most observers—the author considers to be due to the mode of administration. Beginning with a trial dose of $\frac{1}{20}$ milligramme, to which there has never been a response, the next dose is $\frac{1}{10}$ milligramme, and the increase afterwards is $\frac{1}{10}$ th at a time until 1 milligramme is reached; then $\frac{1}{5}$ th until 2 milligrammes are reached. After that the increase is by $\frac{1}{2}$ milligramme up to 10 milligrammes; and from 10 to 20 milligrammes by $2\frac{1}{2}$ milligrammes; and after this by 5 milligrammes at a time. No dose must be repeated until the effect from the previous dose has subsided, and then not till after twenty-four hours. If the local or the general reaction is well marked or prolonged, a return to the dose which was previously inoperative is required.

Periods will occur when for weeks together no local or general reaction is observed, while the subjective and objective improvement of the patient continues; and whenever a point has been reached where this improvement is radical and active symptoms have entirely subsided, this is the time to stop the use of the remedy, allowing an intermission of from two weeks to a month. If no relapse has then occurred, if recovery is apparent, the patient is simply kept under observation. If a second course is required, the initial dose is again $\frac{1}{10}$ milligramme; but the dose is increased each time so long as no local reaction is produced.

Over 100 patients have been thus treated with between 6,000 and 7,000 injections, and in no case has any detrimental effect been produced or any discomfort been caused.

Hunter's modification has not been found to possess any advantages over the original tuberculin.

With the author, tuberculin is no longer on trial as an experiment; he finds its effects as reliable and as uniform as could be hoped under the great variety of individual conditions presented by tuberculosis.

Commenting on the revival of tuberculin, *The Editor, New*

York Medical Record (June 10, 1893) calls attention to K. von Ruck's 25 cases just referred to, and 12 cases in which Hance used Tindeau's modification. Taking the two sets of statistics together, cure was effected in 9 out of 10 incipient cases, and great improvement in 1; of 12 advanced cases, 10 were cured, 1 improved, and 1 was lost sight of. These results are undoubtedly most satisfactory; but the patients were selected, and had the benefit of the best environment. In Japan also Kitasato is reported as obtaining excellent results from a modification of tuberculin.

At a meeting of the Birmingham and Midland Counties Branch of the British Medical Association (*Brit. Med. Journal*, 1893, i., 411), **R. Saundby** showed the right lung from a case of phthisis which was treated by Koch's method in January and February, 1891. The patient—a man aged twenty-four—had suffered from symptoms of phthisis for a year. Tubercle bacilli were found in the sputum, but disappeared after six weeks' treatment. The physical signs remained unaltered, but the general health much improved. In October, 1892, he came under observation again, suffering from chronic Bright's disease, of which he died in January, 1893. During his latter illness he had no cough or sputa, but dulness and amphoric breathing existed at the right apex. At the autopsy the apex of the lung was found to be covered by densely-thickened pleura, and on incision a number of small cavities were exposed, which were quite smooth-walled and apparently due to bronchiectasis; there were no caseous or cretaceous nodules, nor any traces of tubercle, either there or elsewhere in the lung, and no deposit was found in any other organ.

As a result of investigations at the Koch Institute at Berlin, **Johannes Petruschky** (*Deutsch. Med. Woch.*, April 6, 1893) states that streptococcus infection is the commonest complication of tuberculosis of the lungs. Streptococci were found in 8 out of 14 cases examined. This secondary infection is responsible for the hectic curve of temperature, which is the same as seen in erysipelas, in suppuration, and in puerperal fever, and has been called by Koch "the streptococcus curve." While a patient is suffering from this secondary infection—which is to be feared in every case where cavity exists—the treatment by tuberculin should not be attempted. **Leyden** (*Deutsch. Med. Zeit.*, No. 29, 1893) opposes this view; he holds that the high fever of miliary tuberculosis is produced by the tubercle bacillus alone; and believes that similarly the most important part in chronic lung tuberculosis is played by the tubercle bacillus, the "mixed infection" being of subordinate influence. In his experience the tuberculin treatment

has a beneficial effect in certain cases, especially in laryngeal and pharyngeal tuberculosis. Its unfavourable influence is shown by the fact that in most instances the fever becomes higher, and miliary tuberculosis has sometimes followed. **Ewald** (*ibid.*) could not recognise any specific action in tuberculin; of 10 patients watched for six months after treatment, 6 were very much improved, 1 was getting worse, and 2 were dead.

Langermann (*Deutsch. Med. Zeit.*, No. 51, 1892) has tried tuberculocidin in four cases of pulmonary phthisis. In one, where the right lung was almost free at the commencement of the treatment, infiltration of the upper and middle lobes came on during the injections; and the temperature remained high and weight decreased in spite of the large doses that were given. In another case there was no improvement whatever; in a third there appeared to be some improvement at first, but later the injections lost their effect, and the patient died. Although tuberculocidin does not produce serious constitutional or local disturbance, yet the author has grave doubts as to its curative action.

E. F. Inglais (*Internat. Med. Magazine*, Feb., 1893, p. 41) testifies to the value of the "Shurly—Gibbes" treatment of tuberculosis by iodine and gold and sodium bichloride. (See "Year-Book" for 1893, p. 53.)

The analysis of a series of 42 cases treated by these remedies shows that the disease has been arrested in about 19 per cent. of the cases; in 14 per cent. great improvement has taken place; and in 35 per cent. benefit apparently was obtained for some time, though it was not permanent. Nearly all the patients who obtained no good were far advanced in phthisis; while most of those treated at the beginning of the disease have either greatly improved or recovered. But even in advanced cases the treatment is not always valueless.

H. S. Norris (*New York Med. Journal*, Nov. 5, 1892) calls attention to the value of the internal administration of ozone in certain cases of phthisis. He used "aquozone," a $2\frac{1}{2}$ volume per cent. solution of ozone in water, with some hypophosphites to maintain its stability. Three ounces of this were given four times a day, one before each meal, and the fourth at bedtime. Ozonised cod-liver oil containing 6 volumes per cent. of ozone was also administered in a $\frac{1}{2}$ -ounce dose after each meal. The treatment was most successful in patients under thirty-five, suffering from catarrhal phthisis, where the disease had not gone far into the second stage, was not too active, and was limited to a single lobe—or, if in both lungs, to comparatively small areas. In every case where these conditions existed, immediate and progressive

improvement occurred. The ozone water was given on an empty stomach, with the view of promoting its absorption into the circulation.

J. Comby (*L'Un. Méd.*, No. 1, 1893) advocates the use of intra-pulmonary injections of chloride of zinc in phthisis. All the cases in which he adopted this method of treatment were early ones, the disease being confined to the apex. The solution employed varied in strength from 1 in 50 to 1 in 20 ; three drops of this were injected with a hypodermic syringe, and the dose was repeated every third or fourth day until four to six injections had been given. No unpleasant effects were noted ; the results were considered to be favourable in the three cases submitted to treatment. The object of this method is to produce a cure by exciting the development of fibrous tissue in the affected portion of the lung. Experience, however, has already shown the very serious risk that attaches to the use of irritant intra-pulmonary injections. (See "Year-Book" for 1890, p. 34, § 32.)

Hypodermic injections of salol in tuberculosis are favourably spoken of by **G. Grossi** (*Rif. Med.*, Oct. 31, 1892), from the experience of its use in eleven cases in different stages of phthisis. With a special syringe holding 5 grammes he injects daily this quantity of a solution composed of 10 parts of salol to 30 of oil of sweet almonds. This dose is gradually increased by half a syringeful at a time until three syringefuls (equal to 5 grammes of salol) are given daily—at 7 a.m., noon, and 7 p.m. The injections are best given in the gluteal region, where they cause no trouble beyond some local swelling after a time, and when this appears the treatment is stopped for awhile. With the exception of one advanced case, all the patients were much benefited ; fever and night-sweats ceased, cough was relieved, bacilli diminished, and strength and weight increased.

The bacillary theory of tuberculosis has had the result of directing attention much more closely to the possibility of the infection of healthy persons by the phthisical ; and various impracticable suggestions have been made for the isolation of all cases of consumption. Short of this, however, much may be done to minimise any possible danger by the inculcation of precautions in the disposal of the sputa.

In a paper entitled "The Logical Consequences of the Bacillary Theory of Tuberculosis," read before the Harveian Society (*Brit. Med. Journ.*, 1893, i., 1,010) **Chaplin** emphasised the importance of the disinfection of the sputa, and pointed out the difficulty of dealing satisfactorily with the matter. He advocated the compulsory notification of tuberculosis. In the

discussion which followed, **Heron** and **Ruffer** strongly supported his conclusions.

W. R. Huggard (*Brit. Med. Journ.*, 1892, i., 768) considers that the prevalence of tuberculosis might be much lessened if the following hints were widely distributed:—The chief modes of infection are by (1) the inhalation of dried and pulverised expectoration; this may occur when a tuberculous person expectorates into an ordinary pocket-handkerchief, or upon the ground. (2) The use of spoons, cups, and other similar articles improperly cleansed after use by tuberculous patients. (3) Kissing, especially in the case of children. (4) Self-infection may occur when the sputa are swallowed. The necessary precautions are, therefore, the following:—The sputum must be destroyed before becoming dry; to this end a spitting-cup or flask should be used, containing a little disinfectant solution; small pieces of linen or calico may also be used when absolutely necessary, and must be burnt as soon as possible; no piece must be used more than once. Bedrooms should be thoroughly disinfected after being inhabited by tuberculous persons. There is no danger of infection from the breath.

The following instance in support of the contagiousness of tuberculosis is reported from Paris (*Brit. Med. Journal*, 1893, i., 769). A family of nine occupied a house inhabited ten years previously by two tuberculous persons. Although the whole family had previously been in splendid health, in a short time three among them, who occupied the same bedroom as the former tenants, showed signs of tuberculosis. Tubercle bacilli were found in pieces of the wall-paper, and in dust from the ceiling and walls. The former occupants had been uncleanly in their habits; the sputa had dried on the walls, and the bacilli, as Vignal has shown, retained their vitality, and were not destroyed by disinfection. The account given, however, does not make it clear that this conclusion is justified. In the absence of any statement to the contrary, it is fair to assume that the house had been occupied by other persons during the very long interval of ten years; and no mention is made of the effect of such habitation upon them, or any evidence given as to the possible existence of tuberculosis amongst these intermediate inhabitants apart from their occupation of the house. And lastly, inasmuch as no occasion would have arisen to search for bacilli before the development of the disease in the cases reported, it is impossible to prove that the micro-organisms found in the room did not come from these patients themselves.

The first case in which pneumonectomy for phthisis has been performed in Great Britain is recorded by **D. Lowson** (*Brit. Med.*

Journal, 1893, i., 1,152). Although a consideration of the details of the operation finds a more fitting place in the article on General Surgery (*see* p. 235), yet some reference to so important a new departure must be made. The patient, a married woman aged thirty-four, had suffered from symptoms of phthisis for twelve months. As far as could be made out by physical signs, the disease was limited to the right apex. No special difficulty was met with in the removal of a portion of the lung the size of half a fist, which contained a dense tuberculous mass with discrete granulations around it. The ease with which the whole of the lung could be palpated in the search for further disease was very striking; the fingers seemed almost to meet, even when the thickest portions of the organ were grasped. The patient made a good recovery, complicated by the formation of a hæmothorax which developed into an empyema. The operation was performed on February 14th, and when the patient was discharged on May 4th the temperature had been normal for a long time, and there was marked improvement in appetite and strength.

Commenting on this case, C. L. Jennings (*Brit. Med. Journal*, 1893, i., 1,293) calls attention to a communication from Sir Spencer Wells (*Brit. Med. Journal*, 1884, i., 1,117) pointing out that Biondi, of Naples, performed total or partial excision of one lung on 63 different animals, in 57 of which either the right or the left lung was entirely removed; all these animals recovered. He goes on to describe the details of an operation which he considers superior to that adopted by Lowson.

In connection with this subject it is of interest to note that Tuffier has recently given (*Bull. et Mém. de la Soc. de Chir.*, Dec., 1892) the after-history of the patient upon whom he performed resection of the apex of the right lung for incipient phthisis in May, 1891 (*see* "Year-Book" for 1892, p. 83, § 28). The man has since resumed work, and suffers from no symptoms whatever of his former condition, and there is no apparent difference between the two lungs on physical examination.

Resection of the lung for tuberculosis may be regarded from two points of view. As far as the operation itself is concerned, the instances already recorded are brilliant successes, and may be accepted as proving that no insuperable obstacles exist to the removal of a portion of the lung, and that the patient may make a perfect recovery. On the other hand, a difficulty that must always be encountered is the impossibility of certainty in the determination by physical signs of the exact extent and distribution of the disease in any given case. It is true that Lowson

states that in the living collapsed lung it would be very easy to ligature and cut off many portions of the organ, if tubercle were found in scattered patches; but in the case of deposits not only existing on its surface, but distributed through its substance, as is so commonly seen, it would be practically impossible to remove the separate foci, and it would consequently be necessary either to excise the whole of the containing portion of the organ, however extensive, or to abandon the operation; and the procedure is obviously too serious to be lightly recommended for purposes of exploration. It must further be borne in mind that the cases selected would be those in which the disease was early in stage and limited in extent—in fact, just those in which most is to be hoped from less heroic measures. However, the development of the operation, and the after-history of the patients concerned, will be awaited with much interest.

3. Treatment of Special Symptoms.

Huggard (*Brit. Med. Journal*, 1893, i., 171) says that although the value of venesection in suitable cases is recognised now more clearly than formerly, yet most writers dealing with the subject mention pulmonary tuberculosis as a contra-indication. As a rule, the loss of 8 or 10 ounces of blood, or even more, in hæmoptysis does not seem to have a harmful effect on the patient's general condition; but, on the contrary, a distinct improvement is often noticed to follow. But when a portion of the lung becomes blocked by effused blood, an aggravation of the disease usually occurs; and this it is which is mainly responsible for the extension or more rapid advance of the disease after hæmoptysis. Two instructive cases are mentioned, in one of which 48 ounces of blood were removed by venesection, with much benefit in checking the hæmorrhage, the fall of the pulse-rate being marked in both instances. The chief indications for bleeding are the following:—The patient must be plethoric; the pulse must be of high tension; the general health must be good, and the patient free from marked constitutional symptoms such as night-sweats, high temperature, and debility; but the presence of inflammatory pyrexia is not a contra-indication. The case is usually marked by recurrent hæmorrhage, and the disease is generally, but not always, in the early stage. In this type of case the hæmorrhage is usually preceded either by a sense of fulness in the head and general heaviness, or by a feeling of unusual well-being; in the first of these conditions the hæmoptysis is likely to be followed by a sense of relief; in the second by prostration. Where a sense of heaviness precedes the hæmorrhage there is probably a high degree of plethora. Where it is preceded

by a sense of well-being, the plethora is probably only relative—that is, the blood-pressure is only what could be easily resisted by healthy vessels, but is too great a strain for vessels weakened by disease.

J. Cochrane (*Lancet*, 1893, ii., 112) discusses the influence of vomiting in checking hæmoptysis. He believes that in a case where no further hæmorrhage occurred after the injection of ergotinin, its cessation was due to the extreme nausea and free vomiting induced by the drug; and quotes Trousseau in support of this view (“Lectures on Clinical Medicine,” N.S.S., 1870), who lays stress upon the use of ipecacuanha powder in large doses, giving to a man of sixty-two doses of rather more than a drachm, repeated at short intervals so as to cause violent vomiting, with the result that frightful hæmoptysis recurring during five months was immediately arrested. He also states that “for the last two centuries physicians have lauded the Brazilian root as a remedy in all forms of hæmorrhage”; and cites Baglivi, “*Radix ipecacuanhæ est specificum et quasi infallibile remedium in fluxibus dysentericis aliisque hæmoragiis.*” And after referring to the many precautionary measures usually imposed upon the patient suffering from hæmoptysis: “Yet here we are giving a medicine which produces vomiting, during which the face swells, the blood stagnates in the veins by which it is being conveyed to the auricles, and consequently the pulmonary veins become distended. One might expect that such treatment would cause the hæmoptysis to return in a much more profuse degree, but in place of this it is stopped in nearly every case.”

De Havilland Hall (*Lancet*, 1893, ii., 164) is reminded of a case recorded by him (“St. Bartholomew’s Hospital Reports,” vol. xi., p. 240), where the patient coughed up more than four pints of light blood in the course of nine days; and attributes the favourable ultimate result to the administration by Gee of 10-grain doses of ipecacuanha at intervals of ten minutes for three doses. In every attack the hæmorrhage was arrested as soon as vomiting occurred.

F. Eklund, of Stockholm, contributes (*Therap. Gazette*, Feb. 15, 1893, p. 85) a suggestive article on the treatment of hæmoptysis. After a systematic use of ice and cold liquids, he has long come to regard the administration of anything cold as injurious and founded upon a wrong theory, as he could not help observing that with each ice-pill swallowed, or with each drink of cold milk, the bleeding was increased. The cold causes irritation of the ends of the pneumogastric nerve in the mucous membrane, and hence excites cough; while it produces at the same time contraction of

the vessels of the stomach and a corresponding dilatation of the bloodvessels in the diseased area. Further, if attention is but paid to the statements of intelligent patients who are liable to hæmoptysis, it will be found that there is nothing that they fear so much as the drinking of cold liquids, because the coughing up of blood is an immediate consequence. Those who suffer from hæmoptysis should be very careful to keep their feet warm, as otherwise congestion of the lungs occurs, and blood is coughed up. Washing the mouth and gargling with cold water irritates the ends of the fifth, vagus, and glosso-pharyngeal nerves, and thus increases the expectoration. For these reasons the author has long given, instead of cold, lukewarm mucilaginous potions, with which he has had every reason to be well satisfied. However, a small ice-bag applied over the bleeding spot is often most useful.

J. Menzies (*Brit. Med. Journ.*, 1892, ii., 1,385) relates his experience of oxygen gas as a palliative in a case of phthisis with marked cardiac and pulmonary dyspnœa. The pulmonary disease was advanced, and the weak action of the heart combined to produce severe and distressing dyspnœa. The inhalation of Brin's oxygen extended over two months and a half, and was attended with marked relief; but it was in the final stage of the disease that the beneficial effects of the gas were most striking. The oxygen was administered in a full stream for about a quarter of an hour at a time, and the effect was marvellous, the patient declaring that he could breathe as well as ever while he inhaled the gas. The respiratory distress was relieved to a degree which could not have been effected by any other therapeutic agent.

IV.—DISEASES OF THE PLEURA.

In an elaborate article on salicylates in the treatment of pleurisy with effusion, **Dock** (*Therap. Gazette*, Feb. 15, 1893, p. 78) comes to the following conclusions:—Salicylic acid and its salts are among the most effectual agents in the treatment of this condition. In effective doses the acid is harmless, and with care in the selection of the preparation and in administration causes little or no discomfort. It acts most promptly in pleurisies with serous effusion of recent origin or of long standing; but it is efficient in simple dry pleurisy, and often acts favourably in secondary pleurisy. There is no evidence that it is useful in empyema. The drug acts as a diuretic, but may have an effect on the pathological process, or on the cause of the disease. It has, however, a more marked action in pleurisy than the ordinary diuretics. It can be used at the earliest period of the disease, and

favourably affects all symptoms. It may be given in the form of the acid, or of any of its salts, in doses of a drachm of the former or one to two drachms of the latter daily. In ordinary cases 60 to 90 grains of sodium salicylate or salol daily is enough, and the amount should be lessened by one-third or one-half when the effect is manifest. The ordinary precautions must be taken in giving the drug, and the total quantity of urine should be measured daily.

H. C. Gardiner (*Therap. Gazette*, Feb. 15, 1893, p. 113) advocates the early removal of pleuritic effusions. It has been his custom to aspirate very early in all cases of moderately large effusion, not waiting for the subsidence of fever or the efforts of nature, or the slow effect of drugs; and in not a single instance has he regretted prompt action. In 20 cases thus treated, all save 2 have done well; 14 needed but one tapping, and recovered with perfect expansion of lung. Three cases required a second aspiration, which removed much less fluid than the first, with excellent result. Three cases needed repeated aspiration, 1 of which made a good recovery; the other 2 did well as far as the operation was concerned, but died later of tuberculosis. Fever, unless very high, is no contra-indication to aspiration, and in most cases subsides after it. The lung usually expands perfectly, and the patient makes a speedy recovery.

DISEASES OF THE NERVOUS SYSTEM, INCLUDING INSANITY.

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IN the following summary special attention may be directed to the articles on the new hypnotic, chloralose ; to the investigations of Peterson and Kennelly on the effect, or rather the non-effect, of powerful electro-magnets on the human body ; and to the large amount of literature which has arisen in connection with the treatment of disease by injections of animal extracts.

The various subjects will be considered in the following order :—

- I. The Treatment of Insomnia.
- II. The Relief of Pain, including Headache and Sciatica.
- III. The Treatment of Epilepsy.
- IV. The Treatment of Chorea.
- V. The Treatment of Tetanus and Muscular Spasm.
- VI. Hypnotism.
- VII. Electricity.
- VIII. The Treatment of Insanity.
- IX. Treatment by the Injection of Animal Extracts.
- X. Special Methods of Treatment in Various Nervous Disorders.

I.—THE TREATMENT OF INSOMNIA.

1. Amylene Hydrate.

Peiser (*Fortschr. der Medic.*, No. 1, 1893) has investigated the influence of amylene hydrate on the elimination of nitrogen in the urine, comparing it in this respect with that of chloral hydrate. Submitting several individuals to a fixed diet, he estimated the nitrogen in their urine, using Kjedaahl's method. As a result he found that while chloral hydrate increases the decomposition of the albuminous matters of the body, amylene hydrate has a directly opposite effect, diminishing the nitrogenous waste. He concludes that in all diseases in which the use of hypnotics is

likely to be required for a long period, and especially in those affections which are accompanied by great nitrogenous waste, the hydrate of amylene is to be preferred as a hypnotic.

2. Chloralose.

Hanriot and Richet (*Semaine Méd*, Jan. 11, 1893) reported the results of a research on the physiological and therapeutic action of a new hypnotic called chloralose. This is a crystalline body formed by the reaction of anhydrous chloral and glucose on each other with elimination of water. Chloralose has a bitter taste, and is fairly soluble in hot water, but in cold water only in the proportion of 6 grammes per litre. In a dose of 60 centigrammes per kilo of body weight it is toxic to the dog; but in weaker doses—for example, 2 centigrammes per kilo.—it produces very marked hypnotic effects. It is consequently more active than chloral. It has an excitant action on the medulla, the reflex movements being considerably exaggerated. Its physiological action may therefore be summed up in the statement that it has a hypnotic effect on the encephalon, and an excitant effect on the medulla. By experiments made on themselves the authors ascertained that doses of 7 or even 15 grains could be given to man, and that a dose of 3 to 6 grains is sufficient to induce dreamless and quiet sleep without any sense of fatigue, headache, or dyspepsia on waking. In certain cases patients unable to tolerate chloral or morphine obtained refreshing sleep with the help of chloralose.

In an editorial in the *Brit. Med. Journal*, June 10, 1893, p. 1,233, it is mentioned that chloralose was first described by Hetter in 1889. The formula is $C_8H_{11}ClO_6$. It does not appear to have any bad effect on the heart or circulation; the blood-pressure remains almost normal under the influence of a large dose, and with fatal doses the heart is the last to die, death occurring through arrest of the respiration. In small doses it diminishes the respirations, but it has no effect on the temperature. With a dose administered by the stomach (·25 gramme per kilo. of body weight), the dog walks about, avoids obstacles, but appears to have lost all power of recognising what these objects are. With a larger dose the dog walks as if under the influence of alcohol. With a dose sufficient to cause sleep the sensibility to pain is obtuse, and may be absent. Thus, compressing the skin or claws forcibly causes no evidence of pain, and it seems that with chloralose the sensibility to pain is completely abolished. The dog, however, continues to react to tactile impressions or to shock; thus a tap on the table causes a reflex movement, either localised or general. The drug appears to offer the possibility of separating tactile from painful sensibility. The reflexes are not only

preserved, but are exaggerated. Chloralose acts directly on the cerebrum, leaving the bulb and spinal cord unaffected. The excitability of the cortex cerebri for direct stimulation diminishes with the dose of the drug. It does not appear to be cumulative in its action, and the dose does not require to be increased in order to obtain sleep.

Goldenberg (*Thèse de Paris*, 1893) finds that chloralose acts especially on the brain and medulla, and its action manifests itself with doses of 2 grains, although 35 grains daily may be given (in divided doses) without bad effect. When administered by the mouth, sleep usually comes on in an hour and lasts for seven or eight hours, and on waking there is no headache or digestive disturbance. To produce sleep Goldenberg gave 2 to 3 grains for a woman and 5 grains to a man. It is given dissolved in water, each tablespoonful containing $\frac{3}{4}$ grain of chloralose; or in capsules each containing 3 grains; or pills each containing $1\frac{1}{2}$ grain. In water its taste is readily masked by peppermint. There is no difficulty in waking, and it is not followed by vomiting, nausea, constipation, headache, lowering of arterial tension; there is no cumulative action, and the patient does not become accustomed to its use. It is useful in cases of simple insomnia, and above all in cardiac affections and in diseases of the stomach and intestines. It lessens dyspnoea and regulates the heart-beat. It does not succeed in cases of insomnia associated with pain, where morphine should be given. In some exceptional cases it has been found to produce headache, disturbances of vision, and spasms. Hysterical patients are very susceptible to chloralose, and in these cases it should be given with care.

Landouzy (*Comptes Rend. Hebdom. de la Soc. de Biol.*, p. 1, Jan. 20, 1893) used this drug for eight months, giving it to thirteen patients, who were all neurasthenic, without fever or organic disease, and all bad sleepers, to whom the ordinary sleeping draughts were useless. In eleven cases comfortable, refreshing sleep was obtained with doses of four to nine grains; sometimes four or five hours' good sleep was obtained with a dose of 4 grains at eleven p.m., and two or three hours' more sleep after a second dose of three grains in the early hours of the morning. In a few instances there was slight headache or vertigo for an hour after waking; in two women in whom neurasthenia was severe there was no success, but the drug was followed by headache, nausea, faintness, and irregular action of the heart. Some patients took it every night for six weeks, some every other night; and Landouzy records his opinion that its results were on the whole decidedly better for such cases than those of chloral.

In seven other cases where there was much pain it was of doubtful advantage.

Paul Marie (*ibid.*) tried it in a series of twelve patients with insomnia from various causes—phthisis, typhoid fever, bronchitis, and emphysema, etc. The results were good in most of the cases, even with doses as small as three grains; but in two alcoholic cases of insomnia 4 grains gave little or no relief, and morphine was considered preferable.

Moutard Martin (*ibid.*) gives a detailed account of eight cases in the Hôpital de la Pitié on whom he had tried chloralose in doses not exceeding 6 grains, with very good results, even in two cases of alcoholic insomnia and the pains of subacute articular rheumatism. There were no sequelæ of discomfort.

Ch. Ségard (*ibid.*) gives equally good reports of its effects in one case of neurasthenia and two of chronic valvular disease of the heart; but he found it of comparatively little use in the pains of gout and neuralgia. In a case of paralysis agitans a dose of 10 grains was given, which was followed by heavy sleep, but at the same time increase of muscular tremor. All the physicians who have tried chloralose agree that it has no bad effect, either irritant or constipating, on the digestive tract.

Lacaze (*Sem. Méd.*, Mar. 25, 1893) says the results obtained by chloralose as a hypnotic agent in diverse maladies confirm in all points the indications of Richet. With 3 to 6 grains a calm, tranquil sleep is obtained. In a case of tetanus, chloralose diminished the contractions, suppressed the cramps, without being able, however, to stop the progress of the disease. In a case of paramyoclonus, sleep and a diminution of the spasmodic movements were obtained after antipyrin, bromides, and chloral had failed.

D'Amore (*Gazz. d'Osp.*, June 1, 1893) reports the results of his clinical experience with this drug in a number of different affections in which obstinate insomnia was a prominent symptom. In some of these, other hypnotics, including chloral, had failed. Chloralose in every case induced prolonged and restful sleep, which was followed by no disagreeable after-effect on waking. D'Amore sums up the effects as follows: Chloralose has marked soporific properties; it has an excitant action on the spinal cord, but none on the heart or respiration; it causes no secondary effect whatever, a decided advantage as compared with other hypnotics, particularly chloral hydrate. It induces sleep when given in doses varying from 5 to 15 grains, these doses being much smaller relatively to the body weight than those required to produce a hypnotic effect on animals.

Lombroso and Marro (*Gazz. de Osp.*, June 10, 1893) reported

the results of fifteen observations on three lunatics to whom chloralose was given in doses varying from $3\frac{1}{2}$ to 7 grains. Sleep was always induced at first by a dose of $3\frac{1}{2}$ grains, but afterwards it was found necessary gradually to increase the dose in order to obtain the same effect. When the remedy was discontinued insomnia returned. The authors also studied the modifications in the temperature and in the urine which followed the use of the remedy. In one case a sub-febrile temperature was recorded; in others the temperature always fell from $\frac{2}{10}$ to $\frac{9}{10}$ of a degree Centigrade. As regards the urine, in one case there was diminution, absolute as well as relative, in the amount of urea; in the others it was increased. In all the chlorides were increased. The authors affirm that chloralose is the least harmful of all the hypnotics in common use, and very seldom causes systemic disturbances of any consequence. In one case which he watched with special attention Lombroso observed tremor and loss of memory following the administration of doses of from 2 to 4 grains.

Ch. Féré (*Soc. de Biolog.*, Feb. 25, 1893) has noticed that the tolerance for this drug is much greater than Hanriot and Richet have indicated. He has been able to give it in doses of 15 grains, 22 grains, and even 35 grains. As it does not bring about digestive troubles, it is preferable to other hypnotics in epilepsy, hysteria, and chorea, and the results obtained have been satisfactory.

3. Hypnal.

Filehne (*Berlin. Klin. Wochens.*, No. 5, 1893) draws attention to the value of hypnal as a sleep-producing agent. This substance, which is chemically mono-chloral-antipyrin, results from the synthesis of chloral hydrate and antipyrin. Most of the preparations now in the market under the name of hypnal differ considerably, both chemically and in their physiological action. The hypnal of trade is almost insoluble in boiling water, and shows no antipyrin reaction. On the other hand, active hypnal, or as termed by Filehne "per-hypnal" (Hypnal-Höchst), dissolves very readily in hot water, and gives the characteristic tests for antipyrin. Moreover, it is physiologically very active, and merits the name of "hypnal." The hypnotic action of this substance does not depend solely on the amount of chloral contained in it (45 to 55 per cent.), the active dose of hypnal being not really larger than that of chloral; further, the equivalent dose of chloral produces much more prostration. The depression of the vaso-motor system and of the heart-beat seen in rabbits even with small doses of chloral is wanting with hypnal in small quantities.

It develops only with large amounts, and in degree corresponding to the amount of chloral contained. This substance is easily soluble in the proportion of 1 in 10 of water; has so little taste that it scarcely requires a flavouring agent for its administration, and may be given in a dose ranging from 15 to 30 grains. Its hypnotic effects set in after about 10 to 30 minutes. Filehne says it appears to be a remedy which acts promptly in many cases; but, like all these substances, it sometimes fails entirely. Out of 124 trials made on patients there was no action 27 times, and in 20 the effect was slight. In the minor forms of excitement in the insane, in commencing delirium tremens, and in chorea, good results were obtained; while the graver forms of excitement did better with chloral hydrate and hyoscine. Simple insomnia appears to yield to it; sleeplessness caused by pain is frequently relieved.

4. Sulphonal.

Kast (*Arch. f. Exp. Path. u. Pharm.*, 31, I., 1892), from a study of the published cases in which poisonous effects have followed the use of sulphonal for a prolonged period, gives the following as characteristics of the condition of chronic poisoning by the drug:—(1) Disturbances of digestion, as vomiting, diarrhoea, or constipation. (2) Of the nervous system, as ataxia and feebleness of the limbs, ptosis, and ascending paralysis. (3) Ischuria, oliguria, sometimes albuminuria, or the presence of hæmatoporphyrin. These are the general signs. Kast is of opinion that accumulative action of the drug produces, instead of a transitory diminution of the nervous excitability, a permanent depression thereof, just similar to that caused by a single large dose. He finds that the dose best calculated to produce a hypnotic effect is about 30 grains for a man and half the quantity for a woman. These quantities should be the maximum daily dose. He advises also that an interruption should be made from time to time in the use of the drug, so as to ensure its elimination. Loss of appetite, vomiting, or pains in the stomach he regards as indications for the immediate discontinuance of the remedy.

E. Schaefer (*Therap. Monatsheft.*, Feb., 1893) quotes a case in which a patient had taken about 6 ounces of sulphonal in the course of nine months. The urine was then found suddenly to be dark in colour, owing to the presence of hæmatoporphyrin or non-ferrous hæmatin. It was also diminished in quantity, and obstinate constipation set in. These symptoms were accompanied by gastric and hepatic pains, with irregular temperature and failing strength. The red corpuscles in the blood were deficient in number and colour, and did not form into rouleaux.

5. Trional and Tetronal.

Boettiger (*Berlin. Klin. Wochensch.*, Oct. 17, 1892) has used trional in seventy-five cases in Prof. Hitzig's clinique. The single evening dose is from 15 to 60 grains; 15 to 30 grains was mostly used. It was occasionally given in divided doses during the day. Any systematic treatment was not interrupted. The cases fall into three groups: (1) Simple sleeplessness occurring in functional or organic nervous disease. Uninterrupted and mostly deep sleep occurred in from 15 to 45 minutes. In only one case was any giddiness or other ill-effect noticed on the following day. In some cases it was used every evening for two or three weeks without losing its effect. (2) Sleeplessness with bodily pain. Here the results were not nearly so good. In one case of severe hypochondriasis the result was variable according to the pain present. As regards the morphia and cocaine habits, the author, unlike Schaefer, found it useful in one case. (3) This group, including patients with mental disease, is divided into two parts, according as the sleeplessness was accompanied by moderate or severe mental excitement, etc. In only 2 out of 33 cases of the former class was there no hypnotic action. The drug had no effect on the mental condition. In the second class the results were variable. Whether larger doses would have been more efficient is doubtful; unpleasant results have been noticed after such larger doses. The author refers to 5 cases of mental disease with marked excitement in which fractional doses were given with the best results; but he adds that the number of the cases was too small.

The drug was given by the rectum (usually in 30-grain doses) in sixteen cases. It acted as promptly and efficiently as when given by the mouth. The author concludes that trional is an excellent hypnotic and sedative, and without unpleasant results when given in moderate doses. Sleep is often induced in fifteen minutes. The drug is without effect in sleeplessness due to bodily pain, in acute alcoholism, and in cases of great mental excitement and motor restlessness. Trional has a more marked and prompt action than chloralamide, 30 grains of the former corresponding to 45 or 60 grains of the latter. Amylene hydrate approaches nearer to trional in its effects. In some cases trional may take the place of hyoscine, yet the subcutaneous injection of the latter is preferable in great mental excitement.

Brie (*Neurologisch. Centralbl.*, No. 25, 1892) has used trional in forty-two cases of insanity, about 360 single doses of from 15 to 45 grains having been administered. It was dissolved in hot water, and given half an hour before retiring. As a general rule,

sleep followed within an hour. According to the results of his numerous observations, trional possesses an extraordinarily favourable influence. It should be the first drug mentioned and recommended as a hypnotic. He believes it will take the place of sulphonal, and will invariably be given the preference, as it is almost tasteless, is easily administered, acts rapidly, and its after-effects are rarely or very slightly manifested. Its use is indicated in simple insomnia, and also in the sleeplessness of insanity, associated with restlessness and marked excitement.

Raimondi and Mariottini (*Rif. Med.*, Aug. 17, 1892), from a series of observations on trional and tetronal, comparing them also with sulphonal, arrive at the following conclusions: (1) Both drugs act as powerful hypnotics in the same sense as sulphonal, exercising their action on the cerebral cortex. (2) They succeeded in many cases in which sulphonal had altogether failed. (3) The influence of the ethyl group on the hypnotic action in man was marked; it was unfortunate, however, that with an increasing number of ethyl groups in the molecule the toxicity of the compound steadily increased. In fact, the toxicity of sulphonal, trional, and tetronal was about as 1 to $1\frac{1}{2}$ to 3. (4) The drugs have but little harmful effect on the vital functions, even on the respiration, but their action on these functions increased in the above order. (5) They both have a slight cumulative action; their action is more prompt than that of sulphonal, and passes off less rapidly. (6) There seems to be no tendency to a condition of tolerance, nor does the dose require to be increased after a time. (7) Small doses have no influence on sweat or temperature; the sleep is quite natural, and respiration normal. (8) The symptoms of slight poisoning are similar to those of sulphonal, but never give rise to alarm. (9) Good effects can be got on single occasions with doses of 7, 15, or 30 grains. For prolonged use tetronal is not recommended, but trional should be alternated with sulphonal. With trional $\frac{1}{2}$ or $\frac{2}{3}$ of the dose is generally sufficient the next day. (10) As to dose and time for administration: (a) The dose may vary from 7, 15, to 45 grains, according to age, sex, habit, etc. (b) It may be suspended in warm milk, broth, etc. (c) While with sulphonal the drug has to be given about an hour before its effect is needed, with these the administration may be deferred till it is desired to produce sleep, the hypnotic action commencing about a quarter of an hour afterwards.

A. Schäfer (*Berlin. Klin. Wochens.*, No. 29, p. 724, July, 1892) says trional and tetronal have both hypnotic and calmative properties. The calmative effects are more marked with tetronal, which is, however, less soporific in its action. Their effects begin

to manifest themselves in from ten to twenty minutes. Trional is indicated, from its sure and prompt hypnotic effect, in the insomnia of neurasthenia, functional psychoses, and organic affections of the brain. It is powerless in cases of abuse of morphine and cocaine, and where the insomnia is due to physical pain. Tetronal is indicated in cases where there is much motor agitation, causing the insomnia. Neither is of any benefit in cases with intense motor and psychical excitement. The dose is between 15 and 30 grains; one can, however, give, without inconvenience, 45 to 60 grains for a dose, or 90 to 120 grains per day. The best mode of administration is in solution in milk or wine immediately before going to bed. The unpleasant effects are confined to certain troubles of the stomach and intestines. The cessation of the medicines, even after long usage, causes no unpleasant symptoms, and patients do not get accustomed to their use. The effects of both drugs are more intense and rapid than those of sulphonal, and they are useful where there is moderate motor agitation, which is not the case with sulphonal, amylene hydrate, or paraldehyde. Against intense moral or physical agitation trional and tetronal are inferior to injections of hyoscine. In 6 per cent. of the cases trional and tetronal leave on the morrow somnolence and prostration, vertigo, faintness, and uncertainty of gait.

Hammerschlag (*Inaug. Dissert., Berl., Mar., 1893*) refers to the circumstances that led to the use of trional—namely, the similarity to sulphonal, from which it differs by containing a larger proportion of the more active ethyl, and then proceeds to recapitulate the published experiences of this narcotic. The substance is odourless, possesses a slightly bitter taste, is not readily soluble in cold water, and is best administered in about 8 ounces of warm liquid, either water, soup, milk, or tea, shortly after the evening meal, and about half an hour before bed-time. The average dose for a healthy individual is about 20 grains, prescribed as a powder. Experience shows trional to be more efficacious than sulphonal, and this the author confirms, more particularly comparing its action with that of morphine and chloral. About 20 ounces, in doses of from 15 to 20 grains, were administered to sixty patients suffering from mania, melancholia, hysteria, epilepsy, morphinism, and general paralysis of the insane. In the cases of alcoholism, contrary to the experiences of other observers, sleep was produced in the majority of patients, this also applying to cases of morphio-cocaine poisoning. As regards the other affections, trional invariably produced results as satisfactory, or more so, than chloral or morphine. Healthy individuals suffering from nervous insomnia are not included in the above observations, but with

such the author invariably found 15 grains sufficient to produce sound sleep. No unpleasant symptoms were caused, excepting some slight digestive disturbances in some instances; and the drug was never refused by any patient. Even after administration for long periods no albumen appeared in the urine.

Koppers (*Inaug. Dissert., Würzburg, 1893*) describes his observations on the effect of trional in several cases. He confirms the well-known narcotic effects, placing trional above sulphonal, amylene hydrate, chloralamide, bromides, and chloral, though he found that where severe pain is present it does not possess the virtues of morphine. The author points out that it is also valuable in diminishing night-sweats, 4 to 8 grains sufficing; a property not hitherto described. As regards after-effects, he prefers it to sulphonal. In one of his patients suffering from heart disease a diminution of blood pressure was caused, necessitating caution in its further use. No other unpleasant symptoms were observed, and sleep was always induced very rapidly, generally in about half an hour.

6. Action of some recent hypnotics on pancreatic digestion.

Gordon (*Brit. Med. Journal, Apr. 22, p. 843, 1893*) has made experiments on the influence of some recent hypnotics on pancreatic digestion, using starch paste in beakers. He comes to the following conclusions: (1) That chloralamide, antifebrin, and antipyrin did not interfere, either in strong or weak solution, with the decomposition of starch into maltose and dextrine by pancreatic solution. (2) That sulphonal and urethane, when the solutions were weak, retarded the change slightly (about two minutes), and that the stronger solutions of these substances did not. (3) That paraldehyde in weak solutions had a distinctly retarding influence of four to eight minutes; and that when 5 minims were added to 60 cc. of mucilage of starch, retardation was complete in presence of .75 cc. of pancreatic solution.

II.—THE RELIEF OF PAIN AND THE TREATMENT OF HEADACHE AND SCIATICA.

1. Analgen.

This is the proprietary name of a new remedy which has been produced by Vis, of Freiburg. Chemically its name is ortho-æthoxy-ana-mono-benzoylamido-quinoline. It is a derivative of quinolin, and has been synthetically prepared by introducing a substituted (acid radicle) amido-group and an æthoxy-group in paraposition into the aromatic quinoline group. In chemical

constitution analgen is the analogue of phenacetin and antifebrin, with the important difference that it is a derivative of the quino-line group, which latter has a marked therapeutic and physiological action of its own, whilst phenacetin and antifebrin are derived from the benzene ring, which in itself possesses no such properties. The therapeutic action of analgen is similar to that of antipyrin. It is a white, tasteless, crystalline powder, insoluble in water, soluble in acids, readily soluble in hot, and sparingly soluble in cold, alcohol. Doses of 45 grains given to dogs proved harmless. When given to man the urine excreted afterwards is of a red colour, supposed to be due to the action of the free amido-product on the uric acid; neither blood, albumen, nor sugar was, however, found in the urine of any person taking the drug.

The most suitable doses for adults are from 7 to 10 grains, and 45 grains per day can be safely administered, in tabloids, cachets, or suspended in some liquid.

It has been tried by various physicians, such as **Golmer** (*Reichs. Medicinal-Anzeiger*, 1893, No. 4), **Bäumler**, **Kunst**, and others, who report favourably as to its anti-neuralgic effects in migraine, headache, sciatica, tabes dorsalis, and rheumatism. As a rule it is followed by no disagreeable after-effects.

Spiegelberg (*Munch. med. Wochen.*, 14, 1893) describes the results of twenty-two successive cases treated by this drug. In ten cases of neuralgia there was a good effect in eight, the two other patients being of a hysterical temperament. One case of hemi-crania and three cases suffering from various rheumatic pains were relieved. There was, however, no effect in two cases of herpes zoster, one of tabes dorsalis, and one of gout. In one case it seemed to produce headache, and in a few cases noises in the ears were complained of; but beyond these no other unpleasant effects were noticed.

2. Antipyrin, Antifebrin, and Phenacetin.

The Therapeutic Committee of the Brit. Medic. Association (*Brit. Med. Journal*, July 29, 1893, p. 278) state that, from 120 reports received, it would appear that both the frequency and importance of the ill-effects noticed after giving the above drugs have been considerably exaggerated. The predominant opinion is that with due care, especially as regards the initial dose, ill-effects other than those connected with idiosyncrasy are extremely infrequent, of little or no importance, and are not of such a character as to limit in any material way the usefulness of the drugs. This conclusion does not so fully apply to antifebrin, the action of which has been frequently followed by ill-effects, the dose employed being in the majority of cases too large.

3. Formanilide.

Bókai (*Centr. f. d. Med. Wissen.*, No. 17, 1893) states that Touszk was led by the encouraging results obtained in the Pharmacological laboratory over which he (Bókai) presides to test the value of formanilide in a number of clinical cases. The general conclusion was that formanilide is less liable to produce dangerous symptoms than antifebrin, is at least equally effective in neuralgia, and is superior to it as an antipyretic. Given to patients suffering from intercostal neuralgia, hemicrania, cerebral tumour, syphilis, lead colic, tabes dorsalis, lumbago, myelitis, and cholelithiasis, it was found to be not inferior as an analgesic to antipyrin or antifebrin. It brought about sleep indirectly by easing pain. The maximum dose given was $7\frac{1}{2}$ grains a day. It was noticed in these cases that a distinct fall of temperature occurred. Preisach made use of the remedy in painful affections of the throat with marked success; he used it as an insufflation in powder, with an equal quantity of starch. The patients experienced at first a sensation of burning, which was succeeded by analgesia, so that swallowing was accomplished without pain; this relief lasted, as a rule, for about eight to twelve hours.

4. Morphine Hydrobromate.

St. Lawrence Finney (*Brit. Med. Journal*, p. 631, Sep. 17, 1892) has used this drug with satisfactory results in cases where the use of morphine in any of its usual forms was debarred owing to unpleasant consequences. He has often induced quiet sleep and relief from pain with a solution of the hydrobromate of morphine without causing headache or nausea. These results were especially noticeable in two cases of phthisis with tuberculous joints. Finney thus prepares the hydrobromate: To the B.P. solution of the morphine hydrochlorate he adds little by little a solution of ammonia sufficient to neutralise the morphine solution, and to render it distinctly alkaline, and then sets it aside to allow complete precipitation, which takes place slowly. Having caught the precipitate on a filter-paper, he redissolves it in dilute hydrobromic acid, and adds sufficient water to make it up to the same quantity as the original solution of the hydrochlorate.

5. Phenacetin.

Eisenhart (*Therap. Monatsh.*, May, 1893, p. 352) reports a case where the repeated administration of 20-grain doses of phenacetin gave rise to considerable discomfort. A patient suffering from neuralgia and epulis, who had found much relief from two doses of 15 grains given at an interval of two hours, took next evening three powders of the same strength, one at 5, one at 7.30, and one at 8 o'clock. About 9 o'clock palpitation of the heart set in with

rapid action and depressed breathing, especially on speaking. About 10.30 these symptoms became worse, and from time to time there was deafness, with sensations of heat and with sweating. There was also sickness and vomiting; but after he had vomited once the discomfort passed away. Fifteen grains of phenacetin next morning produced no ill-effects.

6. Salophen.

Cammer (Therap. Monatsh., Oct., 1892) has used this drug in 15-grain doses in cases of cephalalgia, neuralgia, and migraine. In two cases of supra-orbital neuralgia it was efficient. If used in the early stages of migraine it aborts the attacks; but it has no influence on their frequency. In two cases of acute rheumatism the author used the drug with good results and there was no relapse.

7. Tolipyrin.

Guttmann (Berl. klin. Wochens., No. 11, 1893) has investigated this substance, and finds that in the nature and strength of its action it is similar to antipyrin, and can be used, therefore, in the same circumstances, while the cost is less. Like the older remedy, it is a synthetic product, and differs from antipyrin in having one atom of H of the phenyl group (C_6H_5), displaced by the equivalent methyl (CH_3); thus, while antipyrin is phenyl-dimethyl-iso-pyrazolon, tolipyrin is paratolyl-dimethyl-pyrazolon. It forms colourless crystals, possesses a very bitter taste, and is soluble in 10 parts of water, slightly in alcohol, and almost insoluble in ether. It reduces temperature, and has been found useful in acute rheumatism, and may be given in doses of 60 grains per day. An obstinate case of sciatica had in thirty-eight days $4\frac{1}{2}$ ounces of the drug without unpleasant after-effects. In ten cases of headache it gave complete relief in six, and no distinct relief in four; of these four, antipyrin relieved two.

8. Nitrites for the relief of Headache, Migraine, and Neuralgia.

Leech (Croonian Lectures, Brit. Med. Journal, July 15 and 22, pp. 113 and 169, 1893) says that for the relief of headache the nitrites and nitroglycerine have been much employed, and considerable success has been recorded from their use. Amyl nitrite has been specially credited with the power of relieving migraine, and sometimes curing it. That it will at times cut short an attack no one who has used it extensively can doubt; but in his hands its failures have far outnumbered its successes. Even if, as has been suggested, the immediate cause of suffering in some forms of migraine is connected with local vascular contraction, it is not likely that a very temporary dilatation of the vessels could be relied on to restore a normal condition. We know, however, how suddenly

tension may fall, and inhalation of amyl nitrite given at the right time may be a final cause of relief, the dilatation which it causes not being followed by contraction. But perhaps, as Pick long ago suggested, it is sometimes probably a kind of "surprise influence" which immediately takes away the pain when amyl nitrite is inhaled, just as any other influence, physical or mental, may have the same effect. It not unfrequently appears that after amyl nitrite inhalation has succeeded once or twice, it subsequently fails to give relief. The drug, indeed, has not maintained its promise; the utility attributed to it in the account of earlier reporters has not been borne out by frequent use. It does not seem likely that amyl nitrite can permanently cure migraine.

Nitrite of amyl has been used to combat slight forms of headache, and here, too, it is sometimes successful in giving relief; but as it at times greatly intensifies the pain, its general employment has fallen into disrepute.

Nitroglycerine is probably a far more effective remedy than amyl nitrite. Hammond and many others have borne strong testimony to its utility in migraine. It is naturally most useful in those attacks in which the face is pale and the radial artery tense. Leech has sometimes seen a drop or two of nitroglycerine in these conditions give rapid and long-lasting relief; yet this effect is by no means always seen, and in neurotic patients and those with low tension and an easily excitable circulation the discomforts may be considerably aggravated. Leech believes, however, that nitroglycerine might with advantage be more frequently used for the relief of migraine and headache generally, if care were taken to employ it only where the circulatory conditions point to some degree of high tension. The dose of nitroglycerine given for the relief of headache should always be in the first place small. Even a single drop, if the case be not suitable, may prove very unpleasant for the patient. It is sufficient, in doubtful cases at least, to commence with half a drop of the liquor trinitrini; if slight or any relief ensue in half an hour a drop may be given, and later, if necessary, a larger dose.

In neuralgia, especially of the fifth cranial nerve, the administration of nitrite of amyl and nitroglycerine has been followed by relief; but here again their good effect has probably been due to their circulatory influence or to suggestion.

Though many observers, such as Crichton Browne and Weir-Mitchell, have used the nitrites in epilepsy with success in warding off the attacks, yet it is probable that they will never play an important part in the treatment of this disease.

THE TREATMENT OF SCIATICA.

1. General treatment.

Weir-Mitchell (*Medic. News*, July, 1893) makes some observations on the treatment of sciatica very similar to those given by him in the *International Clinics*, vol. i., 1891 (see "Year-Book of Treatment" for 1892, p. 101). After pointing out the distinction between neuralgia and neuritis, he says that in the sciatic nerve, more even than in any other, does functional disorder due to malaria, gout, rheumatism, syphilis, anæmia, or other cause, pass on to organic disease of the sheath. He points out the necessity for a thorough intra-pelvic examination to discover growths or other tumours exerting injurious pressure. He considers it scarcely possible for any of the neighbouring muscles to cause pain by their contraction even when the nerve is swollen and tender, except where there exists the abnormality of the nerve splitting the pyriformis muscle; the increase of the pain caused by a forward swinging of the leg he explains as being due to stretching of the nerve.

The treatment recommended is as follows:—In mild or early cases dry cupping by means of about three dozen instruments placed over the great sciatic notch and down the back of the thigh and leg, in a treble row over the course of the nerve. They should be removed in about half an hour, and the operation repeated next day. Two or three applications may suffice. For similar cases a free application of a mixture of mustard and molasses is also recommended. If the above means fail, the author applies the principle of rest by firmly bandaging the limb from the foot to the groin in order to decrease the amount of blood in it. The bandage is re-applied twice a day together with a side splint reaching from the axilla to the ankle. After a few days the joint angles are slightly changed at each dressing. Still later passive motion is carefully employed, and after about three weeks the splint is removed during the day and replaced at night. Finally, guided as to time by the presence or absence of pain, the splint is removed altogether, the bandage being kept on somewhat longer, and gentle massage being used between each application after pain has quite disappeared. Constitutional treatment is carried on during the whole period; full diet, cod-liver oil, iron if needful; straining at stool being prevented by warm enemata when necessary. After this treatment any points of persistent pain are treated by strong local counter-irritants—for example, blisters, hot buttons, etc. The patient must not sit during the first week after getting up, but must stand or walk, and that only with crutches. Massage and electricity may be employed,

but are rarely necessary. If nerve-stretching has been resorted to it should be followed up by the above treatment, which alone is sure, in the author's opinion, to relieve or cure most cases.

2. Galvanism.

Rouveix (*Sem. Méd.*, Sept. 21, 1892) says that all cases of sciatica must not be treated indiscriminately by the constant current. A great distinction is to be drawn between acute sciatica characterised by pain as the symptom, and chronic sciatica characterised by uneasiness and stiffness of movement. For the former conditions descending currents which soothe the pain should be used, and ascending currents may be employed afterwards; while for the latter ascending currents should be used; but if the acute stage is not completely over it is apt to cause a return of the pain. It is further necessary to be sure that it is an essential neuralgia that is being dealt with, and not a symptomatic one, as in the latter case, depending perhaps on some bone lesion, the untimely employment of the current would cause serious inconvenience.

III.—THE TREATMENT OF EPILEPSY.

1. *Ætiology of idiopathic epilepsy.*

Herter (*Journ. Nerv. and Ment. Dis.*, New York, Aug., 1892, p. 645) has examined the relation of the uric acid excretion to the epileptic paroxysm, it having been stated by Haig that the grand mal seizure was determined by an excessive accumulation of uric acid in the blood. Further observations were made as to the possibility of a causal relation between putrefactive processes in the intestines and the epileptic attacks, these processes being estimated by the presence of ethereal sulphates in the urine. Thirty-one cases were examined, with the following results. As regards the excretion of uric acid it was shown that before the seizure this had only in a few rare instances varied from the limits of health. This was true of the cases where the urine just before the paroxysm was examined, and of the instances where only the urine for the twenty-four hours preceding the day of the seizure was studied. In general it might be said that the urine passed after a seizure was apt to have a higher uric acid ratio than urine before or about the time of the seizure. This tendency to higher uric acid ratio after paroxysms was to be regarded as a consequence of conditions which determined the seizures, or possibly of the seizures themselves. The excess of uric acid that was observed in epilepsy could not reasonably be considered as the cause of the seizures. The foregoing remarks

apply to grand mal. In petit mal cases of continuously high uric acid secretion had been observed, and this appeared in some way to be related to the cause of the seizures.

As regards the presence of intestinal putrefaction, of the twenty-nine cases of grand mal twenty-one showed unmistakable evidence of excessive intestinal putrefaction, and there was in many a general correspondence between the seizures and the degree of the putrefaction as gauged by the analysis of the urine; and although it was a difficult question, it was considered improbable that the bromides were responsible for the evidence of the putrefaction. It thus seemed probable that the seizures were sometimes the consequence of toxic substances produced in the intestinal canal.

2. General treatment and borax.

Alexander (*Liverpool Med. Chirurg. Journal*, 1893) says that the food of epileptics is to be simple and unstimulating. The hours of sleep are to be ample but not excessive, as is the tendency in these patients. Tobacco is to be avoided. As regards drugs, bromides have been looked upon as the mainstay. The author, however, thinks that in large doses they decrease the number of fits only at the expense of the mind and of the general health, and often do not even decrease the fits. At the home for epileptics at Maghull a combination of borax, 20 grains, with sodium-bromide, 5 grains, three or, in a few cases, four times a day, has proved most useful both in decreasing the number of fits, and even more in improving the mental condition of the patients, who became brighter and more cheerful when almost imbecile. Borax alone did not give good results. An examination of the tabulated record of cases shows that in nine patients the fits were arrested for periods of several months; in seventeen diminished in frequency, often very greatly; in one there was no effect; in no case any increase.

There are three drawbacks to the borax treatment. (1) It is apt to cause gastric disturbances. The medicine must therefore be taken after food, the dose being small at first and gradually increased. If necessary, stop or decrease the supply for a few days. (2) Erythema going on to eczema may be caused, with intolerable itching. This generally passes off if the drug is persevered with. Alkaline baths relieve the itching in the meanwhile. (3) Alopecia complete or in patches occurs in a few cases. Generally the hair appears again even if the drug is continued, but if not, stopping the drug generally suffices.

3. Borax.

Pastena (*Annal. de Neurologia*, Napol., Fas. i., ii., iii., 1892)

has employed this drug in eight cases of epilepsy, and concludes :— That it diminishes the number of attacks, and in many cases suspends them for months ; the best results are obtained in the classical form of epilepsy, and especially where the attacks are of long duration ; also in the slighter forms, as in epileptic vertigo. The drug has no harmful action on the general system or on the digestive organs. It does not act by paralysing the motor centres, as some suppose, since in epilepsy with consecutive motor spasms it has little or no effect. Moreover, having administered it in mania it gave entirely negative results. It has no marked preference for nocturnal attacks, since patients subject to diurnal attacks have had during the treatment nocturnal attacks and *vice versa*. As to the dose, the author begins with 60 grains daily, mixed with water and a little syrup. In some cases he increased the dose until the patient was taking 100 grains daily, and, with the exception of one case, he has met with no irritating effects on the stomach.

4. Influence of borax on the gums.

Lemoine (*Bull. Gén. de Thérap.*, 1892, cxxii., No. 20) says that besides the diarrhœa and skin eruptions which may appear from even comparatively small doses of borax as used in epilepsy, he has noticed a peculiar affection of the gums like that seen in lead poisoning, when borax has been long continued. The gum becomes surrounded by a fairly wide grey-blue seam, is slightly swollen and tender. The condition disappears when the dose is decreased.

5. Bromides.

Eulenberg (*Therap. Monatsh.*, No. 11, 1892) gives the preference to a mixture of the bromides, and considers the best combination to be 2 parts of the potassium salt, 2 of the sodium and 1 of the ammonium. He does not believe in the idea that the higher the atomic weight of the alkali or alkaline earth forming the bromide the more powerful is its action. This is shown by one example amongst several. The atomic weights of potassium and calcium are almost alike, but the bromide of the latter is four times weaker than that of the former. Eulenberg first called attention to the advantage of administering bromides in water saturated with carbon dioxide ; there is a preparation of "Brom-water" distinguished by his name, and containing 2 of potassium, 2 of sodium and 1 of ammonium bromide, which is an excellent and palatable form. It seems to be considered as established that the aggregate dose of the mixed bromides is much more active than the same amounts of one salt, and the administration in carbon dioxide water, apart from the greater stability of the

solution, is more free from the risk of cumulative action or bromism. The mixed bromides may be conveniently taken with sodium bicarbonate and citric acid so as to form an effervescing draught. As regards the dosage, enough should be given not only to lessen the number of attacks, but to produce a lasting diminution in the excitability of the nervous centres. It will be found that rarely less than 75 grains, and rarely more than 150 grains, per day will be needed. Voisin advises that a sufficient quantity should be given to produce anæsthesia of the pharynx, but this is not always a safe criterion, as it varies in individual patients. The total daily dose should be divided into two or three single quantities; the time of administration will vary with the onset of the attacks. Should they be wholly by day, then a large dose morning and evening will answer best; while in purely nocturnal seizures a large quantity late in the evening is indicated. In other cases a dose morning, afternoon, and evening, shortly after meals, is best. The treatment should be continued for two or three years after the last seizure. It ought not to be discontinued for slight symptoms of bromism, but the general health should be improved. The question of increasing or diminishing the dose during treatment Eulenberg answers by saying that when the proper dose is reached it ought to be continued during the whole course, as by lessening it the attacks may recur. There are cases where the bromides do not suit, or are not well borne, or are quite inactive, but these are comparatively few in number. Where there is intolerance of the drug, very careful administration of small doses, combined with iron or arsenic and attention to the general health, may avoid the difficulty. If there is no effect on the seizures, or, as in rare cases, excitement is set up, the bromides ought not to be persisted in, and recourse should be had to other remedies.

Ch. Féré (*Rev. de Méd.*, No. 3, 1893) reports fully twenty cases of epilepsy, in which from 4 to 5 drachms of potassium or strontium bromide were taken daily with the following results. Only one case lost weight very considerably; in nine other cases there was slight loss of weight; four remained the same weight; and six increased in weight during the treatment. Eleven of the twenty cases showed permanent, and seven temporary, improvement. In only two cases was no benefit noticeable. Doses of 4 to 6 drachms of the bromides are harmless when watched, and produce improvement in cases that have resisted smaller doses. Strontium bromide may be given in place of potassium bromide with success. Attention during the course of bromide treatment consists in the frequent examination of the patients to ascertain

the condition of the skin, and taking the weight in order to watch the general nutrition. If loss of weight or skin lesions exist, it is necessary to look after the digestive organs with the greatest care, especially when there is either physical or moral depression and when the temperature is very low, as in these conditions the accidents of bromism would be serious. The use of the drug must be then immediately stopped, and elimination by the intestine hastened by aid of purgatives and by the skin by injections of pilocarpine.

6. Convulsives.

Pierret (*Mercredi Médic.*, Oct. 5, 1892) recommends that, especially in petit mal, epilepsy should be treated by convulsives such as picrotoxine, belladonna and atropine, as they transform the condition into grand mal, and bring about marked improvement in the mental and moral sphere.

7. Diet.

G. M. Hammond (*Merck's Bulletin*, Dec., 1892) says no absolute rules for dietary can be laid down. If adults with only a few seizures, they should not overload the stomach or eat indigestible food. The ideal diet for severe cases is one which contains small quantities each of proteids, fats and carbohydrates, and the best is skimmed milk alone, continued until the patient has been from two to three months without an attack. In the functional epilepsy of infancy an improper diet is a great cause, and here peptonised or sterilised milk should be used until the age of four, and even after this milk should be the important article of diet until the seventh or eighth year.

8. Subcutaneous injections of nerve substance.

(See p. 103.)

9. Duboisine in hystero-epilepsy.

Albertoni (*Gazz. d. Osp.*, No. 114, 1892) has tried duboisine in hystero-epilepsy with very satisfactory results. The following case may serve as a type. A girl, aged twenty-three, having suffered from hysteria for three months, began to have frequent hystero-epileptic convulsions on the loss of consciousness. Injections of morphine and atropine, with various other kinds of treatment, having proved useless, Albertoni injected $\frac{3}{500}$ grain of duboisine sulphate in the evening. In half an hour the patient was asleep, had a quiet night, and only three convulsions in the subsequent twenty-four hours. On the following evening $\frac{3}{400}$ grain was used with an equally satisfactory result. In a few days the convulsions ceased entirely, and only two more occurred in the subsequent five months, each of which was immediately checked by a single injection.

Belmondo (*Riv. di Fren.*, xviii. Fasc. 2) also speaks very highly of duboisine in hystero-epilepsy. With doses of $\frac{3}{250}$ to $\frac{1}{44}$ grain he has always been able instantly to cut short the most violent and prolonged hysterical convulsions.

Samuely (*Allg. Wien. Med. Zeit.*, No. 12, 1892) has used duboisine in doses of $\frac{1}{33}$ grain injected during the height of the hystero-epileptic attack, thereby almost immediately cutting it short.

IV.—THE TREATMENT OF CHOREA.

1. Exalgin.

Moncorvo (*Therap. Gaz.*, xvi., No. 9, p. 624, 1892), dealing with the treatment of chorea by exalgin, expresses the belief that this drug is superior to antipyrin. He says that it is not only efficacious in controlling the choreic movements, but that it also relieves the other symptoms which accompany the disorder, such as mental troubles, insomnia, muscular weakness and digestive derangements.

Krauss (*New York Med. Jour.*, Dec. 10, 1892), on the contrary, tried it in two cases of chorea, and found that the course of the disease was not perceptibly shortened. In nine cases of painful conditions, mostly neuralgia of the fifth [cranial nerve, he found exalgin to be disappointing in its results.

2. Testicular fluid.

Colrat (*Lyon Méd.*, Mar. 26 and Apr. 16, 1893) reports some cases of chorea treated by this method. One, who had been affected for six weeks and had been treated with antipyrin, could sit up after the first injection, and walk about in a week. Another was cured in five weeks, and two others in six weeks. There seems to have been a decided good effect in the first case, but the others were doubtful. The injections caused no inconvenience.

V.—THE TREATMENT OF TETANUS AND MUSCULAR SPASM.

(A) TETANUS.

1. Tetanus antitoxin.

Roux and Valliard (*Ann. de l'Institut. Pasteur*, March, 1893) discuss the prevention and treatment of tetanus by injections of antitetanic toxin. They tried to determine the exact changes induced in animals by the serum, and found:—(1) That antitetanic serum, even when administered in very small doses, prevents tetanus with certainty if injected before the tetanic

poison. (2) When the serum is injected at the same time as the toxin, even in very small doses, there is always a local tetanus, even when a large dose of serum is administered. (3) When the serum is injected after the toxin, but before the onset of signs of tetanus, there is always a local tetanus. The dose of serum necessary to prevent death is much greater when it is injected long after infection. After a certain time has elapsed prevention is no longer possible, even if large quantities of serum are employed. (4) Tetanus is more or less rapid, and in consequence more or less easy to prevent, according to the site where the toxin is injected. (The foregoing conclusions refer to moderate doses of toxin without bacilli.) (5) When infection is produced by the tetanic bacillus developing in the tissues, prevention depends upon the quantity of serum injected and the time which has elapsed since infection. The treatment fails oftenest when animals are inoculated so that they may have a rapid form of the disease. It may succeed in slow forms of the disease, but the disease is not prevented with certainty unless the infected focus is removed. The disease may resume its course a considerable time after the cessation of the treatment, and when cure has apparently taken place.

Berger (*Sem. Méd.*, Nov. 30, 1892) relates the case of a young man who developed tetanus fifteen days after a wound of the little finger, which became more and more marked in spite of the administration of chloral. Nine days after this he had his first attack of general tetanic convulsions, which rapidly increased in severity. Chloral was pushed to 6 drachms per day in conjunction with morphine without avail, and death seemed imminent. The finger was removed seventeen days later, and at the same time and on the following days antitetanic serum in doses of 40 grammes, representing 4 grammes of the dry extract (anti-toxin) was injected every day according to the method of Tizzoni and Cattani. There was a rapid improvement, the tetanic attacks ceased, and the patient left the hospital in the course of a month cured.

Finotti (*Rif. Med.*, Dec. 12, 1892) reports the case of a patient aged nineteen, who was wounded in the neck by a splinter of wood on Aug. 14. On Sept. 7 the patient complained of pain in the wound and in the lip. Two days later tetanus began; the wound in the neck was excised and cauterised. Some of the secretion from the wound produced tetanus in animals. Cultures also revealed the characteristic bacillus. On Sept. 12th one injection and on the 13th two injections of .25 gramme of anti-toxin were given. On the 14th the patient felt somewhat better,

and could open his mouth slightly. Another injection was given, but then the stock of antitoxin failed. For the next day the improvement was maintained, but all the trouble returned and was even aggravated by the 20th, when a fresh supply of antitoxin arrived. Between the 20th and 27th seven injections were given, and the patient steadily improved. By Oct. 3rd he was practically cured. In this case the amount of urea excreted was increased both absolutely and relatively to the uric acid.

See also Bacteriology, p. 440.

Barth (*Sem. Méd.*, Mar. 8, 1893) relates the case of a boy aged eighteen suffering from idiopathic tetanus. Potassium bromide and chloral were given in large doses without any result. Roux then injected on the seventh day three doses of 50 cc. of antitoxin serum of the potency of 10 millions. Seven injections (altogether 300 cc.) were given, and cure resulted in a week.

Magagni (*Rif. Med.*, Feb. 3, 1893) records the case of a man aged twenty-seven, who began to show prominent symptoms of tetanus eight days after sustaining a lacerated wound of the left foot. The symptoms increased till the fifteenth day in spite of large doses of chloral and complete rest. During the next seven days thirteen injections each of 25 centigr. of antitoxin were given; at first once a day and afterwards twice daily. During the time of administration of the earlier injections the symptoms steadily progressed, but after this the condition slowly improved. He was discharged cured twenty-eight days from the first appearance of the symptoms. The part actually played by the antitoxin in the process of cure is doubtful, such cases sometimes recovering without any special treatment.

2. Antipyrin.

Cavina and **Venturoli** (*Rif. Med.*, July 23, 1892) record two cases of tetanus in which the administration of antipyrin in large doses seems to have contributed to the ultimate recovery of the patients. Chloral was given at the same time, but the spasms were only modified when the antipyrin was given also. Even if the drug is not actually curative they think it does good by enabling the patient to live while the toxin is being eliminated.

(B) MUSCULAR SPASM.

1. Apparatus for writer's cramp.

Morton Prince (*Journal Nerv. and Ment. Dis.*, Mar., 1893, p. 195) has designed a simple apparatus for cases of writer's cramp. The principle on which it is constructed is that of making use, for the purpose of holding the pen and writing, of the muscles antagonistic to those affected with the cramp. In the particular

case he mentions the muscles in which the spasm chiefly and primarily occurred were the flexors of the three fingers which held the pen—namely, the thumb, forefinger, and middle finger. It occurred to Prince to devise a means of holding the pen by using muscles which tended to open and extend the fingers so as to give the flexors a rest. For this purpose he took a plaster cast of the thumb and first two fingers in the position of holding the pen in writing. From this he constructed a tin apparatus like three glove-fingers without ends, and soldered together in one piece, a narrow tin tube to hold the pen being fixed between the thumb and first finger-piece. This apparatus is put on the fingers when writing, and as it is loosely made it can only be held firmly by a muscular effort which tends to separate the thumb and fingers, thus pressing their backs against the sides of the tin tubes. The motion for writing is obtained from the wrist or shoulder, the purely finger movements being entirely prevented. It was found to be of much service.

2. Method of holding pen in writer's cramp.

Langes (*Münch. Med. Wochens.*, Feb. 28, 1893), himself a sufferer from writer's cramp, uses the following method of holding the pen. The holder is placed between the index and middle fingers, and rests against the centres of the first and second phalanges of the bent middle finger. It is supported in this position by the index finger slightly curving round it, and by the thumb. The holder points straight outwards, and makes an angle of 30° to 35° with the paper. The fourth and fifth fingers form the support, and the movements take place at the brachio-carpal articulation.

3. Sulphonal for arresting cramps and reflex spasms.

Edw. Andrews (*Therap. Gaz.*, Nov. 15, 1892) points out the use of sulphonal for the purpose of overcoming reflex spasm. After recognising the fact that its action is very slow, and that when the cramps are internal it is necessary to give a large dose two or three hours before bed-time, or else to give small doses several times a day, he strongly urges the employment of this remedy in such spasmodic affections.

VI.—HYPNOTISM.

1. General.

A Committee of the British Medical Association, appointed to investigate the nature of the phenomena of hypnotism, its value as a therapeutic agent, and the propriety of using it, report (*Brit. Med. Journal*, July 23, 1892, p. 190) that they were

satisfied that the hypnotic state was genuine, but that no phenomena supported the idea of animal magnetism. The condition is attended by mental and physical phenomena differing widely in different cases. Among mental phenomena are altered consciousness; temporary limitation of will power; increased receptivity of suggestion from without, sometimes to the extent of producing passing delusions, illusions, and hallucinations; an exalted condition of the attention and post-hypnotic suggestion. Physical phenomena are vascular changes (such as flushing of the face and altered pulse rate), deepening of respirations, increased frequency of deglutition, slight muscular tremors, inability to control suggested movements, altered muscular sense, anæsthesia, modified power of muscular contraction, catalepsy and rigidity, often intense. But all these mental and physical phenomena are rarely present in any one case. The term hypnotism also is somewhat misleading, as sleep is not always necessarily present.

As a therapeutic agent it is frequently effective in relieving pain, procuring sleep, and alleviating many functional ailments. As to treatment of drunkenness, the evidence was encouraging but not conclusive.

Dangers may arise from want of knowledge, carelessness, or intentional abuse, or too continuous repetition of suggestions in unsuitable cases. Also they say that its use should be restricted to qualified men, and if the patient be a female, then only with a female attendant present. No public exhibitions should be allowed.

2. Hypnotism and hysteria.

Babinski (*Journ. Nerv. and Ment. Dis.*, New York, vol. ii., 1892) concludes a series of articles on the relation between hypnotism and hysteria with the following remarks. He says it is just to recognise that hypnotism may render real service in the treatment of hysterical cases, but that until further proof is forthcoming no very great therapeutic effects are obtained by this mode of treatment in cases which are not connected with hysteria. Of course, in many cases there is present, in true organic nervous diseases, a distinct neurotic element, and so the general condition may be improved by hypnotism, by this neurotic element being removed. Moreover, hypnotism does not seem to be without inconvenience. It has happened to several hypnotisers to excite attacks of hysteria by attempts of this kind, which supports the theory of the relation between hypnotism and hysteria. Attempts should therefore not be made to hypnotise all patients systematically. He further states that although in Bernheim's list of cases cured by hypnotism only 32 out of 208

observations show hysteria as a cause, yet an examination of these cases shows conclusively that the much larger number of them were undoubtedly hysterical. He quotes from Magnan, Forel and Briand to show that hypnotism is of little, if any, service in insanity.

VII.—ELECTRICITY.

1. Electro- and suggestion-therapy.

Eulenberg (*Berl. Klin. Wochens.*, 1892, No. 8) objects to the statement that electricity is purely psychical in its action. He considers it of the greatest value in the diagnosis and prognosis of paralysis. How often in infantile irritative conditions, neuralgias, convulsions, astasia-abasia, neurasthenia, hypochondriasis and psychical impotence, has not electricity been invaluable, acting in some instances as a psychic corrector? He found electricity sufficiently new for it to be given a longer trial.

2. Magnets and the nervous system.

Fred. Peterson and A. E. Kennelly (*New York Med. Journ.*, Dec. 31, 1892) have made experiments with the most powerful magnets in Edison's laboratory in order to ascertain whether they exerted any influence on the animal organism.

Benedikt has asserted that the magnet increased the resistance to conduction in the motor nerves, and, like Proust and Ballet, has expressed the opinion that powerful magnets could not be used with impunity, since if their use was prolonged they gave rise to thoracic pain, difficult respiration, and disorders of digestion. Peterson and Kennelly first made observations under the microscope, the slide being placed within the magnetic field of a very powerful electro-magnet (5,000 c.g.s. to the sq. cm.). Iron in its finest divided form was attracted, and when placed in water was polarised, but dry powdered hæmoglobin was not visibly affected. Blood placed on the slide in the magnetic field failed to show the feeblest traces of polarisation movements or vibration. No effect was produced on the movements of living cilia from the pharynx of the frog, nor upon the circulation in the frog's foot. A cylinder, two feet in diameter and seven inches deep, upon which a set of field magnets converged, was next used to test the assertions as to the effect of magnetism in retarding conduction in motor nerves. A dog was introduced into this cylinder and for five hours remained under the influence of a magnetic field with an intensity of from 1,000 to 2,000 c.g.s. to the sq. cm. The dog was in no way affected, and was very lively when liberated. Similarly a boy under the same circumstances was in

no way affected. The next experiments were made by introducing the head into an electro-magnetic field (2,500 c.g.s.). The current could be turned on or off the coils of the electro-magnet without the knowledge of the subject. No effect on consciousness, sensation, circulation, respiration or tendon reflexes, could be perceived; the subject was quite unable to say when the current was turned on or off. The last series of experiments was made with an electro-magnet in which the current was reversed 280 times a second. No effect whatever was perceived when the head was introduced within the field of this instrument.

The authors conclude that the human organism is in no wise appreciably affected by the most powerful magnets known to modern science; that neither direct nor reversed magnetism exerts any perceptible influence upon the iron contained in the blood, upon the circulation, upon ciliary or protoplasmic movements, upon sensory or motor nerves, or upon the brain. The authors further observe that they find it difficult to understand why magnetism appears to have no influence whatever upon the human organism.

3. Electrical treatment of certain phases of neurasthenia.

W. F. Robinson (*Jour. Nerv. and Ment. Dis.*, Jan., 1893, p. 33) deals with cerebral neurasthenia characterised by the well-known morbid fears, the despondency, and the headache. The main indication for treatment is to stimulate and tone up the weakened nerves so that the proper balance between the will, judgment, and imagination is restored. The treatment comprises many things besides electricity, which may, however, be looked upon as the principal agent in the treatment, both from its local and general or systematic action, the latter being of great importance. Of the three forms of electricity, galvanic, faradic, and static, the faradic is not of much service, except in the form of general faradisation, which is inconvenient in the consulting-room. The static form is the best to begin with, given in the form of a static bath for five minutes daily. It is desirable to treat the patient every day, both on account of the electricity itself and also for the frequent interview with, and advice from, the physician. This should be kept up for a month and then intermitted for two weeks, during which time medicines may be given. After the two weeks, the treatment may be resumed and kept up for a month or more, if the patient is making satisfactory progress. If only recovering slowly, static sparks may be drawn from the spine. The two contra-indications for this form of electricity are when the patient is totally unaffected by the agent, and those rare cases where a

very unpleasant action with dizziness, headache, and nausea results.

Galvanism is better not applied to the head itself, as vertigo and headache often result. It is best to begin with the ordinary bimanual treatment, an electrode in each hand, with a dose of 5 milliampères, increasing by degrees to 10 milliampères. If well borne, this should be changed for the spinal application, after five or six applications of the bimanual method. If the ordinary method of spinal galvanisation causes too much irritation, the following method may be used:—An electrode is put on each side of the spine at the same level, first in the lumbar region, gradually working up to the upper dorsal region, the current being occasionally interrupted. The length of time required for the treatment is very variable, mild cases being cured in ten weeks; but if the person is of middle age and has been suffering for a long time, two or three years may be required before recovery is established.

VIII.—INSANITY.

1. Chlorobrom.

Keay (*Lancet*, Mar. 18, 1893) has used chlorobrom in the treatment of mental and nervous diseases for a year, and thinks it a valuable addition to the safe and reliable hypnotics. He does not find it of service as a general sedative in maniacal excitement, or in the excitement of general paralysis of the insane or epilepsy; here sulphonal and the bromides are more efficient and equally safe. As a hypnotic in melancholia and allied mental diseases he finds chlorobrom reliable, pleasant, and free from risks and disagreeable after-effects. In the insomnia of great exhaustion he gives 1 ounce of chlorobrom at bed-time, and finds it gives six to eight hours' sound sleep, and is not followed by sickness, headache, or lassitude. In the mental depression accompanying the excited or motor variety of melancholia he has found it more useful than paraldehyde. Usually he gives from 1 to 2 ounces as a dose. He has never known unpleasant results or craving to follow its use. Its full effects are generally produced an hour after its administration. It has no unpleasant smell and taste, such as paraldehyde has.

2. Duboisine.

Belmondo (*Riv. Sper. di Fren. e di Med. leg.*, vol. xviii.) publishes his experiences of 167 injections of duboisine in thirty-two patients. As a sedative in psychical or motor disturbances it resembles hyoscine, and as a hypnotic it acts better than chloral in many cases. In acute insanity, especially acute mania, it acts as

a psychical co-ordinator, and appears to exert a powerful influence on the course of the disease. The doses used were from $\frac{1}{130}$ to $\frac{1}{40}$ grain; larger doses are unnecessary and cause loss of appetite and vomiting. Belmondo believes, however, that the powerful effect of such small doses is in a measure due to the susceptibility of the southern race, and that therefore larger doses may be necessary in other countries.

Mazzocchi and Antonini (*Rif. Med.*, Nov. 15, 1892) have also made experiments with the neutral sulphate of duboisine. Thirty patients presenting symptoms varying from slight mental exaltation to violent mania were submitted to daily injections of the drug in the asylum of Bergamo, others being kept, for purposes of comparison, under the ordinary treatment. The doses given varied from $\frac{1}{130}$ to $\frac{1}{30}$ grain, in no case, however, exceeding the higher limit in the twenty-four hours. Although more than 200 injections were administered, there were no unpleasant consequences, such as vomiting, vertigo, or disorders of vision, as chronicled by some other observers. In nearly every case mydriasis occurred a few minutes after the injection, and a sense of general weakness, with a diminution of the pulse-rate. This was followed, in the majority of cases, by a profound sleep, which began about twenty minutes after the injection and lasted about five hours. There seems to be little fear of establishing a tolerance for duboisine, for one patient, during two months, received as many as fifty injections of $\frac{1}{60}$ grain, and at the end of this time no increase of the dose seemed necessary. Indeed, after the dose which was efficacious had been once discovered, no additional effect seemed to be obtainable from a larger amount. In order to avoid the idea that the results were due in a measure to suggestion, the patients were sometimes given injections of water instead of the drug, but in no case was a similar effect produced. In other cases used for comparison, atropine or morphine was given, but proved decidedly inferior to duboisine. It is further stated that in a few cases submitted to this treatment, not only was a powerful hypnotic effect manifest, but the patients were quieter during their waking moments, and their mental condition was decidedly improved. Though there were some cases in which little if any benefit resulted, there was only one case in which the drug appeared absolutely inert.

Mendel (*Neurolog. Centralb.*, Feb. 1, 1893) recommends the use of duboisine in cases of insanity exhibiting great motor agitation, if the restlessness be not simply the consequence of hallucinations and delusions. $\frac{1}{130}$ to $\frac{1}{80}$ grain injected subcutaneously produces muscular relaxation in a few minutes. By

thus suppressing the abnormal motor activity of such cases, sleep is promoted. The drug, however, has no soporific action; in melancholia, paranoia, etc., unassociated with restlessness, no sleep is produced. Paralysis agitans is another affection in which notable temporary relief can be obtained from duboisine. Usually about a quarter of an hour after an injection the tremor subsides, and the patient for some hours regains the power of writing legibly, of moving about, or of sleeping. In advanced stages of paralysis agitans the effect of duboisine upon speech is sometimes prejudicial, sometimes favourable. Apart from the influence on the faculty of speech, $\frac{1}{300}$ to $\frac{1}{200}$ grain of the drug two or three times daily may be continued for a long time without harmful results. The author very seldom exceeds $\frac{1}{60}$ grain for a dose. Dilatation of the pupils, dryness of the throat, and moderate acceleration of the pulse may be caused by so small a dose as $\frac{1}{300}$ grain. Sometimes vertigo and unsteadiness of gait are induced, which are due, in the author's opinion, to the action of the drug on the motor centres.

Hepperger (*Therap. Monat.*, Aug., 1892) has used a dark yellow preparation of duboisine sulphate, which is easily soluble in water, in the form of subcutaneous injections in different kinds of mental disease. Fifty-two injections were made in eleven cases. He gives the following conclusions: (1) Duboisine sulphate is a fairly trustworthy sedative which, injected subcutaneously in doses of $\frac{1}{70}$ to $\frac{1}{50}$ grain, causes, in most cases after from ten to twenty minutes, a sedative effect lasting many hours. (2) It is an efficacious hypnotic, which, when applied subcutaneously in sleeplessness not accompanied with excitement, causes sleep even in a dose of $\frac{1}{70}$ grain. When accompanied by excitability it ought not to be given to cause sleep in a dose under $\frac{1}{70}$ grain. (3) The sedative and hypnotic action of the medicine begins in the first half-hour. The sedative action lasts from one to fourteen hours; the hypnotic action from one to six hours. (4) Duboisine sulphate can in some cases cause toxic effects in small doses ($\frac{1}{80}$ grain), and it is to be recommended that, on using it for the first time, a dose of not more than $\frac{1}{70}$ grain should be given. (5) In a few cases the patients got accustomed to the medicine after from three to four injections, but if interrupted for two or three days this is not noticed.

3. Hydrotherapy.

Peterson (*Amer. Journal Med. Sci.*, Feb., 1893) advises the more extended use of hydrotherapy, and maintains that the hot wet pack is the most efficient hypnotic in all forms of insomnia in the insane. Conjoined with overfeeding and an occasional dose of

hyoscyamine or duboisine, the wet pack gives excellent results in maniacal excitement.

4. Hyoscine.

Vergez-Honta (*Thèse de Paris*, 1893) says that hyoscine seems to have the same properties as hyoscyamine, and according to most authors has none of the inconveniences of the latter. It succeeds well in different forms of mental disease to calm agitation and bring about sleep. In ataxic pneumonia it gives good results, providing there is no affection of the myocardium. It can bring about sleep in nervous cases where morphine and chloral have failed, but its action is less constant.

5. Trional and tetronal.

Garnier (*Le Progrès Méd.*, p. 465, Dec. 3, 1892) has experimented with these drugs as hypnotics for the insane, and thinks they will prove of service both in general and asylum practice. He found their hypnotic effects to be produced more quickly than those of sulphonal. He did not use any dose beyond 60 to 70 grains per day, giving this sometimes in one large dose in cases of acute mania with excitement. He has got good results in sub-acute cases. In cases of incipient general paralysis he has found the use of smaller doses less satisfactory, as they produce some signs of cerebral congestion. He does not consider that he can decide whether sulphonal, trional, or tetronal would best suit any given case, and he finds other observers disagreeing on the subject.

IX.—THE INJECTION OF ANIMAL EXTRACTS.

Below will be found a fairly full account of the extraordinary results said to have been obtained by the injection of various extracts derived from the animal body, together with criticisms by other observers. That we have in the thyroid extract a most excellent remedy and cure for myxœdema cannot admit of doubt, and this fact seems to have encouraged certain investigators in the belief that other organic extracts may be useful in other diseases. Such a position is an entirely illogical one, and no general induction must be allowed to be drawn from the case of myxœdema; each separate extract should be judged on its own merits. I have brought forward as much evidence, for and against, as I could find in order that the reader may judge for himself on this very important innovation in the domain of therapeutics.

Personally I am not convinced of the great usefulness of these extracts (excluding, of course, thyroid extract in myxœdema). A careful examination of the various statements in favour of this

treatment will show them to be most contradictory, some asserting that organic diseases can thus be cured, others that they can only be relieved. When we read of the so-called cures of locomotor ataxia we must remember that a few years ago suspension was supposed to cure the same disease, though it is very doubtful if a well-authenticated case of such cure ever occurred. When we further read that Brown-Séquard recommends kidney extract for uræmia, pancreas extract for pancreatic diabetes, liver extract for extensive organic disease of the liver, and states that 90 per cent. of cases of locomotor ataxia and 85 per cent. of other scleroses of the cord were either cured or relieved, and, finally, that the pituitary body is of more importance in the animal economy than the spleen, we begin to be suspicious of the whole proceedings. Two remarkable facts may be noticed. First, that it is almost always the purely functional symptoms which are cured or improved, just as is the case when these various nervous conditions are treated by hypnotism or suspension; and, secondly, that whether it is testicular fluid, brain extract, or heart extract which is injected, very much the same phenomena seem to be produced.

The interesting investigations of Capriati ("Year-Book of Treatment," 1893, p. 104), and of Massalongo, Crocq, and Luton given below, weaken very considerably the evidence in favour of this method of treatment.

1. General.

C. E. Brown-Séquard (*Brit. Med. Journal*, June 3, 10, 1893) gives first a short history of the use of animal extracts. He states that if these various extracts are properly sterilised and filtered by d'Arsonval's apparatus they can be injected under the skin or in the veins or arteries without any danger. Although the thyroid, the thymus, or the medulla of bone (Macalister) may have a therapeutic action when swallowed, yet with the sexual glands and the pancreas this is not so. Some have used the process of injecting into the rectum an extremely condensed liquid extract of the gland. If it is the male sexual glands, the two taken from a guinea-pig are finely minced, then crushed, and after the addition of a little water the whole is filtered through paper. The rectum having been washed by an enema, the whole amount of the filtered fluid is injected into the rectum. There is rather rapid absorption, and the effect produced is almost as good as by subcutaneous injection. For the preparation of the fluids used a special steriliser and filter has been devised by d'Arsonval, a description and drawing of which are given in the original paper.

Brown-Séquard then proceeds to narrate cases in which various organic extracts have been of service—for instance, recommends kidney extract in uræmia and organic disease of the kidneys. In diabetes, especially if of pancreatic origin, he says extract of pancreas has proved serviceable (although he does not know that it has brought about a cure), and recommends that hepatic extract should be used in cases of extensive organic disease of the liver, whether with jaundice or not. As regards the injections of sexual fluids, Brown-Séquard says he has received accounts of upwards of 1,600 cases that have been so injected. Of these, 405 were cases of locomotor ataxia, and after eliminating 63 cases in which the diagnosis perhaps was not sufficiently grounded, there remain 342 cases, out of which there were 314 cases of great amelioration or cure. Besides these Depoux, out of 13 cases he has treated, counts 5 cases as complete cures (these 5 cases were shown to the Soc. de Biologie), 6 cases of progressive amelioration, and 2 failures. Gibert of Havre had 2 cases both cured; Victoroff of Moscow 7 cases, 5 of which were either cured or relieved. The various other kinds of sclerosis of the cord give a proportion of 85 per cent. of cures or ameliorations, while ataxia gives about 90 per cent. Superficial cancer was considered relieved in 97 out of 103 cases; pulmonary tuberculosis also was relieved. The symptoms due to organic disease are more easily relieved than those due to pure neuroses; chorea, however, has been much relieved. Epilepsy has entirely resisted treatment, but hystero-epilepsy and hysteria had yielded to the treatment. The author then states that he reserves the question of cure of organic disease; all that he has just said applies to the cessation of morbid manifestations. Guinea-pigs paralysed by section of a part of the base of the brain, or of almost the whole lateral half of the spinal cord, recover the lost functions in a great measure, and very promptly, under injections of the liquid; and he has seen a great amelioration in pigeons rendered ataxic by a slight lesion of the part of their cord called the spinal ventricle. He considers the pituitary body of more importance in the body than the spleen, from the effects of their respective removal in animals. He finally refers shortly to the injection of cerebral substance in nervous diseases.

2. Cerebrin and Cardin.

W. A. Hammond (*New York Med. Journal*, lvii., 4 p. 93, and 16 p. 429) describes the preparation of the brain and heart of the ox, to which he applies the names cerebrin and cardin respectively. The brain or heart is well washed in a saturated solution of boric acid and minced fine; 1,000 grammes are macerated in a fluid

consisting of 1,000 grammes of glycerine, 1,000 grammes of a solution of boric acid saturated at 60° F., and 800 grammes of alcohol. The maceration, which is conducted in a strong jar, is continued for eight months or preferably for a year, and every day the minced organ is subjected to strong pressure with a vegetable masher. After maceration the supernatant liquor is filtered in a metallic press to get out all the fluid. The process of filtration, which is very slow, yields a transparent straw-coloured liquid of sp. gr. 1,070. If a precipitate forms on keeping it must be filtered off through Swedish paper.

The effects of the hypodermic injection of cerebrin are that the pulse becomes more rapid, stronger and fuller; there is a feeling of exhilaration and increased mental activity lasting several hours; the quantity of urine and the expulsive force of the bladder are increased; intestinal peristalsis is also increased, so that constipation ceases and the motions may become fluid; there is a decided increase in the muscular strength and the power of endurance; the presbyopia may disappear for a time; the appetite and digestive power are increased. The most noticeable effects were seen in the debility of old age; it produced good results also in neurasthenia. In two cases of minor epilepsy the beneficial effect was marked, and in two out of eight cases of major epilepsy the paroxysms were reduced to one-half in number and diminished in severity. The quantity of cerebrin injected was 5 minims diluted with an equal quantity of distilled water. The injections were given morning and evening daily or every other day. The injection should not be given at bed-time, as the exhilaration and increased mental activity may prevent sleep.

The hypodermic injection of a like quantity of cardin causes the following effects:—(1) The pulse becomes fuller, stronger and more frequent, and the arterial tension is raised; at the end of eight hours these effects are still well marked. (2) The quantity of urine is increased. (3) After injections made twice daily for several (five) days, the number of red blood-corpuscles and the amount of hæmoglobin are increased. The injections have been used with success in cases of cardiac feebleness and irregularity, in nervous prostration with anæmia, and in chlorosis.

3. Brain extract in neurasthenia.

Constantin Paul (*Bull. de l'Academ. de Méd.*, 1893, No. 17, p. 445) reports the results of the injection of an extract of nervous substance in fifty-three cases of neurasthenia, and attempts to discriminate between those cases of neurasthenia in which this method of treatment may be used with some certainty of success and those in which it is not likely to be of use. He recognises:—

(1) Cerebro-spinal, (2) spinal, and (3) male genital neurasthenia (and spermatorrhœa and impotence). Treatment by injection of nervous substance was found efficacious in all these forms. (4) Neurasthenia of puberty in girls characterised by anæmia; the treatment here removed the underlying nervous defect, and a cure could be brought about by the administration of iron preparations which previously had no effect. (5) Neurasthenia at the menopause due to hæmorrhage (no case). (6) Neurasthenia associated with uterine affections; in these cases the treatment may contribute to bring about recovery. (7) Neurasthenia in hysteria; here the treatment commonly fails because the patients will not persevere. (8) Cardiac neurasthenia of youth due to too rapid growth; these cases commonly recovered under ordinary hygienic treatment; but in one case in which there was arrhythmia in addition to tachycardia the injections induced improvement in this respect. (9) Gastric neurasthenia; the injections were followed by improved appetite, and the patients became amenable to general treatment. (10) Senile neurasthenia; in one case of this condition in which the treatment was tried the results were satisfactory. (11) Neurasthenia with hypochondriasis; the treatment failed owing to the failure of the patients to persevere. (12) Neurasthenia with melancholia; the treatment succeeded only in occasional cases. Insomnia is a symptom of all forms of neurasthenia, and it is during sleep that the forces of the nervous tissues are built up. The first effect of the injections is a return of natural sleep. The periods of sleep are at first brief, but become gradually longer. The power of sustaining physical fatigue is next regained and, at the same time, the cardiac tone is improved; the appetite returns, and the patient reaches a condition in which he is able to assimilate food well, and is susceptible to the favourable action of other therapeutic agents. The substance used for injection was the grey substance of the brain, commonly of the sheep, diluted with water.

4. Brain extract in organic nervous disease.

Dana (*Boston Med. and Surg. Journal*, May 8, 1893) urges that in considering the ætiology and treatment of chronic nervous disease more regard should be had to the possibility of their causation by toxins. He suggests a more extended trial of ferments, immunised serum, extracts of normal tissues and organs, and anti-toxins, in the hope, not of removing sclerotic lesions, but of preventing their extension. He relates one case of rapidly advancing bulbar paralysis in which the progress of the disease was at once checked by injections of glycerine brain extract, sterilised by forced filtration through porous china under carbon

dioxide. Improvement began to be noticeable in about six weeks, and seven months after the commencement of treatment the patient—a man aged 54—showed no trace of the disease, except that there was slight weariness after long conversation or mastication. Six cases of *tabes dorsalis* were treated systematically with brain extract. In two cases the improvement was very striking. In one of these the treatment was commenced by injections of water, and it was not until injections of grey matter were given that any improvement was noticed. Two of the six patients did not improve. In three cases of progressive muscular atrophy, one of paralysis agitans, and one of dementia, the injections were not followed by any improvement. Three out of five cases of epilepsy were improved—that is to say, there was a diminution in the attacks.

Babes (*Deut. Med. Woch.*, July 28, 1892) records the results of injection of normal nerve substance in a large number of patients. Normal brain and spinal cord were made into an emulsion with broth in the proportion of 1 gramme of the nerve tissue to 5 grammes of broth. Of this, 4 to 5 grammes were injected in the abdominal wall or flank five or six times a week in epileptics, and four to five times in neurasthenics. A large number of epileptics were cured and others greatly improved. Good results were also obtained in melancholia, neurasthenia, and cases of slow heart action. A case of sleeplessness in which all known narcotics, even in large doses, had failed was cured after three injections. A patient with headache of over a year's duration was remarkably improved after seven injections. Syncopal attacks and a paralytic condition in another patient disappeared after sixteen injections, and long-standing sciatica after three injections.

5. Testicular fluid and brain extract.

Massalongo (*Rif. Med.*, Feb. 4, 6, 7, 8, 1893), in an article entitled "A New Phase of Suggestive Therapeutics," describes his somewhat extended experience with testicular fluid injections. His conclusions are as follows:—(1) The testicular fluid obtained from young and healthy animals has little or no action on the human organism. (2) The slight and transitory modifications in the circulation, respiration, and temperature, and in muscular force, which have sometimes followed its use may be explained as a result of the physical tension and excitement to which the patient is subjected by the injections. (3) In diverse organic disorders in which the injections were given, any improvement observed might be attributed to suggestion and the influence of the imagination. Some cases of hysteria and neurasthenia in which improvement was observed undoubtedly owed their cure

to these factors. (4) Even if it could be shown that hypodermic administrations of the testicular liquid produced certain excitant or neurogenic effects, it seems strange that there should be a desire to use these rather than the remedies of undoubted efficacy already known. Massalongo, however, holds that any beneficial results which may be obtained are due solely to that expectation of relief which so markedly accompanies the introduction of the remedy. (5) All that has been said above may be taken as applying with at least equal force to the use of the transfusion of nervous tissues as introduced by Constantin Paul and Babes. Beneficial results which follow in some cases can be produced with equal facility by the transfusion of quite inert matters, as numerous experiments appear to have proved.

6. Subcutaneous injections of sodium phosphate and artificial serum.

Crocq (*Gaz. Méd. de Liège*, Oct. 20, 1892) has tried injections of phosphate of soda (2 per cent. in laurel water) in nervous disease. Three cubic centimètres of this solution were injected under the skin of the arm or leg with strict antiseptic precautions, at first every day and afterwards on alternate days. No reaction, local or general, followed; only a slight feeling of heat at the seat of injection was complained of, but this disappeared in a few minutes. The author states that the drug used in the manner described is a powerful nervous tonic which will effect a cure in cases of functional disorder, but can only have a palliative action where organic lesions of nerve centres are present. He recommends the method as equal in efficacy and much superior in simplicity to the injections of testicular fluid or nerve transfusion. He relates several cases (locomotor ataxia, etc.) in which the injections of phosphate of soda were followed by highly satisfactory results.

Luton (*Gaz. des Hôp.*, No. 14, 1893) says there is not one of the effects obtained by means of the so-called "organic liquids" which cannot be obtained by means of certain saline solutions or artificial serums, the essential agent of which is phosphate of soda. The average composition of Luton's artificial serum is distilled water 100 parts, crystallised phosphate of soda 5 parts, sulphate of soda 10 parts. The salts are dissolved; the solution is then boiled in order to sterilise, and afterwards filtered. It is to be injected subcutaneously. One injection of 5 grammes once a month answers all indications. This amount, Luton says, is sufficient to keep a weakened and invalid man in a condition of energy sufficient to enable him to earn his living. He says it is not inferior to Brown-Séquard's organic liquids, and that it can

be produced in whatever quantity may be desired, and is of definite and stable composition, and its effects are so lasting as to make frequent repetition of the injection unnecessary.

X.—SPECIAL METHODS OF TREATMENT IN VARIOUS NERVOUS DISORDERS.

1. Vibration treatment in paralysis agitans, insomnia, etc.

Charcot (*Progrès Méd.*, Aug. 27, 1892) calls attention to the good results which attend the employment of vibration in cases of paralysis agitans. After giving a history of the subject, in which reference is made to the work of Vigouroux, Boudet, and Mortimer Granville, Charcot says he had long noticed the good effect that railway journeys and carriage drives had on persons suffering from paralysis agitans. He has accordingly subjected some patients to treatment by vibration by placing them in an armchair, to which rapid oscillatory movements are imparted by means of a special mechanism set in motion by electricity. Amelioration is generally felt after the fifth or sixth sitting. The painful phenomena are chiefly influenced; the shaking becomes less, the stiffness seems to disappear; they walk better and sleep quietly and well.

Gilles de la Tourette (*ibid.*), assuming that the good results are due to the diffusion of the vibrations over the whole cranium to the brain, constructed a helmet the sheets of which exactly incased the head of the subject, and which was surmounted by a plate on which was placed a small electro-motor, which when in motion caused the plates of the helmet to rapidly vibrate. Insomnia not due to organic disease of the brain, migraine, and neurasthenia, were greatly benefited by this method. Charcot, who has also tried it with good effect in a melancholic patient, considers it a powerful sedative to the nervous system.

Morselli (*Neurolog. Centralb.*, Nov. 15, 1892) has used mechanical vibrations communicated to the head from a tuning-fork. He finds that the treatment is sometimes useful in mild forms of mental disease complicated with local symptoms, such as neuralgia. It is contra-indicated in all kinds of mania, except hysterical, in melancholia with excitement, and especially in epileptic psychoses. It aggravates auditory hallucinations, and is useless in stuporose conditions.

2. The mechanical treatment of locomotor ataxia by Fränkel's method.

Hirschberg (*Bull. Gén. de Thérapeut.*, Jan., 1893) recommends

Fränkel's treatment of tabes by systematic regulated movements, which consist of: (1) Simple muscular contractions—that is, of one muscle, or a physiological series of muscles. (2) Simple co-ordinated movements; for instance, touching the end of the nose with the index finger. (3) Complex co-ordinated movements, such as writing. The more complex movements are gradually performed, the simple movements first. From the use of this method he concludes: (1) It is possible to improve greatly the ataxic movement in tabetics. (2) The gymnastic exercises explain the reason of augmentation and development of muscular force in the affected members. (3) The exercises in making the muscular contractions under the control of the will of the patient ameliorate the inco-ordination. (4) In bettering the *morale* of the patient by giving him more confidence in his extremities, the persistent ideas of pathophobia, which cause so much misery in tabetics, are dispersed. (5) The treatment is indicated in all stages of locomotor ataxia. The best results, however, are obtained when it is commenced before locomotion becomes completely impeded. (6) The treatment is contra-indicated when the course of the disease is very rapid; that is to say, when the clinical picture is developed in less than two years; also when the general condition of the patient is particularly bad, and especially when the articulations are affected. (7) The treatment does not exercise any influence on the cardinal symptoms of tabes with the exception of the ataxia.

DISEASES OF THE STOMACH, INTES- TINES, LIVER, ETC.

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DURING the past year much research has been expended on problems connected with digestion, both in physiological and pathological states. The estimation of the relative quantity of acid of various kinds in the stomach at different stages of digestion still occupies the attention of observers. Even yet, there is no unanimity of opinion as to the best method of estimating such acid, though many papers on the subject have appeared during the year, mostly in the German journals. Similarly, other points, such as the movements of the stomach walls, the duration of digestion, and the relative digestibility of various food stuffs, have been treated of, at much length, in the literature of the year. The great majority of such papers, however, contain nothing which is of use in the treatment of stomach disorders, and I have thought it fit to omit them. These researches, nevertheless, are very important, and doubtless, in time, will lead us to a more rational treatment of dyspepsia in its many forms. At a later portion of this article a few of such researches will be given in abstract; but it will be well to begin with those observations which promise more immediate practical results.

I.—GENERAL TREATMENT OF DYSPEPSIA.

1. Acids and alkalies.

These have formerly been considered almost entirely in their relation to the promotion of the chemical actions going on in the stomach, either by their reactions upon the stomach contents, or by the effect they have in stimulating the gastric secretion. It must be remembered, however, that the muscular mechanism of the stomach is a great power in digestion, and cannot be ignored in the pharmacology of the drugs employed. The following

paper points out this action, although its conclusion is by no means warranted by the facts.

Hirsch (*Centralbl. für klin. Med.*, Jan. 28, 1893) has experimented on two dogs with regard to the action of acids and alkalies on the movements of the stomach. He introduced into the stomach 300 or 400 c.c. of neutral, slightly alkaline or acid fluid by means of fistulous openings situated high up in the intestine. He concludes that neutral and faintly alkaline solutions and weak acetic-acid solution pass in a short time into the duodenum, but that hydrochloric solution (1·5 pro mille) takes considerably longer to do so. Vomiting is soon excited by a 1 per cent. hydrochloric, or 1·2 per cent. acetic acid, solution. He therefore thinks that the opening or closing of the pyloric orifice is much more directly influenced by movements of the stomach than by the reaction of its contents.

[It is obvious that the action produced by acetic acid, which is abnormal to the stomach, must be very different from that of hydrochloric acid—a distinct normal item in digestion. For this reason, I differ from the author's conclusion. The effect of alkalies is shown in the following abstract.]

2. Bicarbonate of soda.

Linossier and Lemoine (*Gaz. des Hôp.*, March 30, 1893) have come to the conclusion that bicarbonate of soda in all doses excites gastric secretion, the most efficacious quantity being 5 grammes given an hour before meals. The increased secretion continues after the day of administration of the drug. They advocate its use in all cases of insufficient gastric secretion, and advise that it should be given some time before meals. In cases of acidity, bicarbonate of soda acts only as a palliative, and may aggravate the condition.

[This follows from the well-known Ringer's law that alkalies will stimulate acid secretions. But I have always thought that, in applying this law, we overlooked the presence of two secretions in the stomach, the one acid, the other peptic, though both are important in digestion. In actual practice, I have found an acid mixture equally provocative of appetite when given before meals, and apparently equally useful in promoting digestion, with an alkaline one. There is the proper occasion for giving each. The kind of alkali is also of all importance. The sodium salts are the best, as being at least less irritant. The potash carbonates are distinctly irritative after a time, and in many gouty patients the salts of lithia in any form cause considerable gastric uneasiness.

The direct addition of pepsin to the contents of the digesting stomach is now a well-known method of treatment. The vegetable

digestive substance, papain, was formerly tried without success, but during the year it has been again used.]

3. Papain.

Sittmann (*Münch. Med. Woch.*, No. 29, 1893) has experimented with this substance. He finds it a remarkable solvent of albumin, $\frac{2}{3}$ of a grain sufficing to change 150 grains of coagulated white of egg, mixed with hot water, into an opalescent milky fluid in the course of two hours. He has found it of great service in gastric digestion. The drug was given in from 4- to 8-grain doses in the form of a paste, and taken immediately after meals. The pain of acute gastritis was relieved by two or three doses of the remedy, and the appetite returned after twenty-four hours. The patient was cured after three days' treatment. In cases of chronic gastritis and ulcer of the stomach, papain was of very great service, and very excellent results were obtained in the treatment of three severe old-standing cases of dilatation of the stomach.

[The older preparations of bismuth, valuable as they are, have been improved upon by recent workers. The phenol compounds, such as carbolic acid and creasote, have been frequently used in former times, and notes upon their value will be found in former issues of the "Year-Book." There are objections to the use of these, mainly based upon their unpleasant smell and the disagreeable eructations caused by their use. These are to a great extent avoided by employing the preparations guaiacol, naphthalin, salicylic acid, and naphthol. The pharmaceutical chemists have recently brought out various combinations of these aromatic bodies with bismuth which are well worth trying in the treatment of digestive disorders, and therefore some results are here appended.]

4. Phenates of bismuth.

Jasenski (*Arch. des Scien. Biolog. de St. Petersbourg*, t. ii., No. 2, 1893) has found that phenol-bismuth, cresol-bismuth, and β -naphthol-bismuth are split up in the stomach into their component parts. The same effect is produced by the intestinal juices. The phenol and cresol are excreted by the kidney. The β -naphthol was partially eliminated in this way, the remainder being excreted with the fæces. The bismuth was entirely eliminated with the fæces.

The toxic properties of the phenols did not appear, owing probably to the extreme slowness of the decomposition which takes place in the intestine. Jasenski consequently recommends these preparations in those cases where bismuth or the phenols were formerly employed.

C. A. Ewald (*Centralbl. für klin. Med.*, p. 54, iii., 1893), in the course of some observations on the diagnosis and treatment of a case of chronic gastric disease with diminished power of secretion, recommends strychnine, belladonna, and Calabar bean as drugs producing increased muscular activity of the stomach. Massage and faradisation were also useful, the latter having also a sedative action. As gastro-intestinal antiseptics he mentioned resorcin, naphthalin, salicylate of bismuth, salol, betol, α - and β -naphthol, and finally benzo-naphthol, which possessed many advantages over α - and β -naphthol. He had observed very favourable results with benzo-naphthol in cases of disturbed activity of the intestinal tract. In the treatment of dysenteric ulceration, or simple colitis, he recommended, in addition, the use of an enema composed of 0.5—0.75 chloral in 250 c.cm. of aq. calcis, with the addition later of a 2 per cent. solution of tannic acid. Benzo-naphthol had a more energetic action than either resorcin or salol, and there was, he thought, no danger of carbolic-acid intoxication with the first-named drug. Lately he had used a combination consisting of equal parts of benzo-naphthol, salicylate of bismuth, and resorcin, with the addition of an aromatic vegetable powder, of which he prescribed a tea-spoonful every two hours.

Brück (*Therap. Monatsk.*, p. 82, Feb., 1893) has experimented with benzo-naphthol in 38 cases of acute and chronic diseases of the stomach and gastro-intestinal disorders in children. In 12 cases the result was negative, owing, probably, either to insufficient length of treatment, or to neglect by the patient. In the remaining 26 cases the antiseptic action of the drug on the intestinal contents was most marked, and the general condition was greatly improved. In acute cases with fever the temperature was quickly reduced; and the drug produced a transitory improvement in the diarrhœa of tuberculous patients. The astringent action of the remedy was most noteworthy, and in no cases was its administration followed by bad results, though smart diuresis frequently occurred. Bruck recommends that the drug should be given in sugar in the form of a powder. He also advocates the use of benzo-naphthol in infective diseases of the intestinal tract.

5. Stomachics.

Hemme (*Zeitsch. für klin. Med.*, bd. xix., 1892) has experimented on the therapeutic value in stomach disorders of (1) orexin; (2) hydrochloric acid with pepsin; (3) alkalies with pancreatic preparations; (4) guaiacol; and (5) pepper.

The investigation was carried out with relation to:—

- (1) Improvement of appetite.
- (2) Changes in the gastric juice and its digestive properties.

(3) The appearance of the characteristic reaction in the saliva when fibrin capsules containing iodide of potassium were taken into the stomach with the object of demonstrating the energy and rapidity of gastric digestion on the fibrin.

The results obtained with guaiacol were the most marked, and especially so in cases of phthisis. The appetite was greatly and permanently increased. Orexin rarely caused improvement of appetite, though it did produce increased acidity of gastric juice and increased movements of the stomach. The other agents experimented with produced little or no therapeutic effect.

Penzoldt (*Therap. Monatsh.*, May, 1893) considers, from the examination of the published experiences, that the results obtained with hydrochlorate of orexin as a stomachic are on the whole, relatively, satisfactory.

He gives the result of the treatment of 37 selected cases of severe anorexia, which on 27 occasions was most successful.

He recommends that the drug should be given surrounded by a wafer, in doses of from 5 to 7 grains daily.

[From trials of orexin, which has been greatly lauded by its discoverer—Penzoldt,—I have had no good results at all. I have on no occasion observed any increase of appetite follow its use; while, on the other hand, it has often caused nausea, vomiting, and pain in the epigastrium. The burning sensation perceived during deglutition can, to a certain extent, be prevented by taking the drug in capsules, or by administering it in beef-tea. The majority of observers, however, who have employed it agree that it is of no value, and my own experience confirms this. It is very likely that the beneficial effects of guaiacol in phthisis, mentioned elsewhere, are to some extent due to the improvement in digestion noticed above by Hemme.]

6. Influence of high altitudes on dyspepsia.

Jaworski (*Centralbl. für klin. Med.*, i., p. 17, 1893) gives an account of the effect of residence at Davos on patients complaining of dyspeptic symptoms. The observations, extending over from three to ten months, were made on 44 cases, 35 which showed tubercle bacilli in the sputum, and 9 in which no bacilli were found.

In 30 cases the dyspeptic symptoms disappeared, in 9 there was great improvement, and 5 showed no change. Jaworski attributes these favourable results to the improved hygienic conditions, to a specifically favourable influence exercised by the high altitude, and to the fact that under such conditions ordinary medicinal treatment was much more likely to be successful than is ordinarily the case. He quotes cases giving equally favourable results in patients suffering from intestinal disorders of various kinds.

[It is now well recognised that a winter residence at Davos, or similar places, is beneficial to many other complaints than tuberculosis. Dyspeptic and neurotic patients improve there, the one essential being that the circulation should be strong. But it is extremely improbable that the author quoted is right in attributing these good results to any special effect of the high altitude. The improved hygienic conditions are quite sufficient to explain the benefits received.]

7. Milk diet.

S. J. Goldsmith (*Brit. Med. Journal*, ii., 1893) advocates the use of aërated milk in those cases in which ordinary milk produces vomiting, or diarrhœa, or both.

His method of procedure is as follows:—The milk is boiled and a small quantity of bicarbonate of soda is added, and when cool the milk is poured into the lower globe of a seltzogene. The upper globe of the seltzogene is “charged” in the usual way with tartaric acid, bicarbonate of soda, and water. The top of the machine must be quickly screwed on, and care must be taken that no milk gets into the upper globe of the seltzogene. The machine must be kept scrupulously clean. Goldsmith recommends that the cleansing should be done by means of ordinary washing soda. In hot weather the aërated milk must be prepared twice a day, but in ordinary temperature it keeps good for twenty-four hours. Goldsmith has obtained excellent results from the use of this remedy.

Hauser (*Berl. klin. Woch.*, Aug. 14, 1893) gives the details of a new method of preparing milk for infant feeding.

Cow's milk, corrected by addition of cream and milk sugar, is used, and to this is added egg albumin heated above 130° C., in order to supply the deficiency in albumin. He uses this preparation after other means of feeding by milk have failed. He has tried it in about 60 cases with excellent results. Vomiting ceases, diarrhœa is checked, and the child gains in weight under its administration. Medicinal measures are rarely necessary in cases of dyspepsia, and of intolerance of the ordinary milk food, when such cases are treated with this “Eiweissmilch” (albumin milk).

II.—CHEMISTRY OF THE STOMACH.

R. Lockhart Gillespie (*Brit. Med. Journal*, p. 237, i., 1893) has experimented with the contents of the healthy stomach by means of artificial digestion with dialysers. His conclusions are:—

(1) That proteids in solution have the power of attracting and probably of combining with HCl.

(2) That HCl so combined does not prevent free HCl from dialysing.

(3) HCl does not combine with carbohydrates.

(4) If in one case the acidity outside the dialysis be less, and in another greater, the contents of the dialysing vessel being much the same, the acidity inside does not vary proportionally.

(5) If the proteid inside varies in concentration, the acidity inside varies with it.

As the results of experiments on a neurotic dyspeptic, he came to the following conclusions:—

(1) Free HCl is secreted from the time food enters the stomach.

(2) The time at which free HCl appears varies with the composition and concentration of the food and with the state of the gastric mucous membrane.

(3) The amylolytic action of saliva can continue during the early stages of digestion, owing to the fact that the acidity at first exists solely in the form of combined acidity.

(4) The free HCl first secreted combines at once with the proteids present.

(5) The antiseptic power of proteid-hydrochlorides is less than that of free HCl.

(6) The acidities per cent. differed in the filtered and unfiltered stomach contents, the total and free acidities being lower in the filtered, the combined acidities higher than in the unfiltered.

(7) The total solids and inorganic salts diminish per cent. throughout the digestive process.

(8) The stomach contents have no further digestive power unless free HCl is present.

(9) The total acidity may vary from 0.108 to 0.36 per cent.; the combined acidity, 0.072 to 0.324; the free, 0.018 to 0.09.

(10) Heartburn is never caused by HCl combined with proteids.

(11) The acidity of the contents of the stomach and that of the urine are often inversely proportional.

As the result of his experiments Gillespie thought that the pain of acidity ought to be relieved more by proteids and copious libations than by alkalies.

III.—THE INFLUENCE OF LOWERED TEMPERATURES ON THE FUNCTION OF THE STOMACH.

Flaum (*Centrälbl. für klin. Med.*, p. 232, ii., 1893) has experimented on the digestion of white of egg by an extract of the stomach mucous membrane, with the following results:—

(1) The artificial juice digested white of egg at 0° C., although slowly; at lower temperatures the action ceased.

(2) Similar products resulted from digestion at the higher or lower temperatures.

In a second series of experiments a frog was used. When the animal was placed in a temperature below 7° C., no appreciable digestion took place. At 10° the digestion was much slower than at ordinary temperatures.

The stoppage of digestion below 8° was the result of absence of secretion.

IV.—GASTRIC SECRETION AFTER THE USE OF MORPHIA.

Hitzig (*Neurol. Centralbl.*, Dec. 1, 1892) found, as the result of the hypodermic injection of morphine in a dog, that the administration is quickly followed by the excretion of a considerable quantity of the alkaloid by the stomach, and that at the same time the gastric secretion is greatly diminished, especially as regards hydrochloric acid. Excess of HCl was secreted after the effect of the drug had passed off.

In the case of a man who had contracted the morphia habit, and who when admitted to **Hitzig's** clinic was taking 0.75 gramme of morphine and 1 gramme of cocain daily, it was found that the gastric secretion contained scarcely a trace of HCl. Under treatment by gradual reduction of the dose of the alkaloid the amount of HCl quickly increased, but no free HCl was discovered until the morphine was entirely discontinued.

V.—GASTRIC DILATATION.

(a) *Diagnosis*.—**Aufrecht** (*Centralbl. für klin. Med.*, June, 1893) calls attention to two signs in the diagnosis of gastric dilatation that have not previously been described. He points out that the hyper-resonant note obtained over a dilated stomach is masked in places by patches of dulness which later are replaced again by a tympanitic sound. The second sign is a percussion-note similar to a cracked pot sound, which may be obtained at the edges of the above-mentioned dulness. He ascribes the cause of the first sign to waves of contraction passing over the organ, and the second to a mixture of air and fluid in the neighbourhood of the peristaltic wave.

(b) *Treatment*.—**Dujardin-Beaumetz** (*Jour. de Méd. de Paris*,

No. 45, 1892) recommends the following treatment in dilatation of the stomach. Every morning the patient should take :—

Rx Salol.
 Bismuthi Salicylatis.
 Sodæ Bicarbonatis āā gr. clv.
 Misce et divide in pulveres xxx.
 Sig. One to three powders to be taken at a time.

The following prescription is also of great use :—

Rx Benzo-naphthol.
 Bismuth. Salicyl.
 Magnesiae āā gr. clv.
 Misce et divide in pulveres xxx.
 Sig. To be taken as above.

For constipation in this condition he recommends a dessert-spoonful of the following powder at night :—

Rx Sennæ Foliæ.
 Sulphuris pur. āā gr. lxxxx.
 Pulv. Fruct. Foeniculi.
 Pulv. Fruct. Anisi āā gr. xlv.
 Potass. Bi-tartratis gr. xxx.
 Pulv. Radicis Liquiritiæ gr. cxx.
 Sacchari gr. dcxxv.

Every morning the patient should wash himself all over with a rough sponge previously dipped in hot water containing Eau de Cologne. This should be followed by vigorous rubbing with a hair hand-brush. He advises, too, the following diet :—

The interval between breakfast and the midday meal should be seven hours, and no food should be taken between meals.

All kinds of food are permissible, except game, fish, molluscs, other shell-fish, and cheese.

It is of the greatest importance :—

(1) That all food should be thoroughly cooked or roasted, especially vegetables.

(2) That fruit should only be taken cooked.

Toast and a little soup are allowable.

After each meal one glass and a half of a little white wine may be taken mixed with a considerable quantity of water. Pure wine and liqueurs must be avoided, and no liquid is to be taken between meals.

(c) *Absorption from the stomach in connection with gastrectasis.*—J. Von Mering (*Therap. Monatsh.*, May, 1893) has experimented on dogs with the object of estimating the changes undergone by fluids in the stomach. He has come to the following conclusions :—The contents of the stomach pass at intervals

into the intestine owing to a rhythmical opening and closing of the pyloric orifice. Fluids leave the stomach more rapidly than solids.

Water does not undergo absorption when introduced into the empty stomach. Alcohol is absorbed in large quantities, and sugars, dextrin, and maltose are taken up in smaller quantities. The quantity of a substance absorbed increases with the concentration of the fluid used. During the process of absorption there is always a free flow of water into the stomach, and this increases with the quantity of the substance absorbed. The author goes on to explain, in the light of these results, the reason for the increase in the stomach contents in cases of dilatation of the organ due to pyloric obstruction. He points out that the absorption of sugar, peptone, etc., in the stomach will be accompanied by an outpouring of water into the viscus which cannot pass into the intestine on account of the obstructed pylorus. He therefore advises that, in these cases of gastric dilatation, alcohol should be prohibited, and that nourishment should be administered in a concentrated form. Lavage of the stomach should afterwards be carried out.

VI.—ACHYLIA GASTRICA.

Einhorn (*Centralbl. für klin. Med.*, pp. 209–10, 1893) gives the details of four cases of this condition. One hour after taking a test breakfast there was an absence of gastric secretion, and no digestion had taken place. The treatment is chiefly dietetic, with lavage and faradisation of the stomach. As regards the dietetic treatment, the most important element in it is the giving of finely divided food.

VII.—GASTRIC ULCER.

Fleiner (*Münch. Med. Woch.*, May 2, 1893) condemns the use of narcotics in the treatment of the pain associated with ulcer of the stomach. He advocates the use of large quantities of bismuth administered through the stomach tube. The advantage of this method of administration is that by means of postural aid the bismuth is brought into direct contact with the spot affected.

His method of procedure is as follows: The stomach is washed out, and then 10 to 20 grammes of bismuth suspended in 200 ccm. of lukewarm water are run into the stomach and the tube washed out with 50 ccm. more water. The patient is then placed in the proper position—*i.e.*, on the right side if the pylorus is affected, on his back with the pelvis raised if the ulcer is on

the lesser curvature of the stomach, and so on. The tube is closed by means of a clip and left in, and the patient remains in the desired position for ten or fifteen minutes, until the bismuth has settled. The fluid in the stomach is then drawn off and the tube removed. The patient, after remaining in position for half an hour, is permitted to take breakfast. This procedure is carried out at first daily and then at gradually increasing intervals, which are regulated by the pain, etc. No poisonous effects were ever observed, and the treatment is applicable to all forms of ulceration of the stomach. The results obtained were remarkably good.

[In the opinion of the reviewer this method of treatment is not only dangerous but unnecessary. The stomach tube should never be used where ulcer is even suspected. The more rest the stomach has, the better. Again, if the mucous membrane of the stomach is observed post mortem, where bismuth has been administered during life by the mouth, the deposit will be seen evenly distributed over the surface without the aid of the stomach tube.]

VIII.—VOMITING.

1. Bromide of strontium.

G. Coronedi (*Lo Sperimentale*, Fasc. 3, 1892) has experimented with bromide of strontium in cases of vomiting, and finds it most useful as a gastric analgesic and in vomiting of nervous origin. He gave it in doses of 2 grammes twice daily immediately before meals. It acts like the other bromides, causing diminution first of central excitability, and then of the nerve-endings in the stomach. Probably some of the analgesic effect is due to the metallic element, as the bromide of strontium contains less bromine than the other members of the bromide group.

J. Dougall (*Brit. Med. Journal*, p. 1,287, ii., 1893) describes a case of vomiting in which bromide of strontium was successful after a great many of the recognised gastric sedatives had been ineffectual.

2. Nitroglycerine.

Rowland Humphreys (*Brit. Med. Journal*, 693, i., 1893) has experimented with nitroglycerine in all forms of vomiting, during the last three years. He finds that in the vomiting of gastric catarrh, adult or infantile, acute or chronic, anæmic or alcoholic, it acts almost as a specific. The vomiting is controlled at once. The only form of vomiting in which it failed to give relief was that associated with peritonitis, and in such cases it seemed to do harm. No other bad effects were observed during its use.

3. Kumiss.

Gordon Sharp (*Brit. Med. Journal*, p. 405, i., 1893) advocates the use of kumiss in cases of obstinate vomiting. He gives the details of three cases which were most successfully treated in this way. He ascribes the efficacy of this beverage to the fact that the casein (true) acts as a soft soothing agent to the irritated gastric mucous membrane; and further, that it is not digested until it reaches the duodenum. The serum albumin of the milk is for the most part converted into acid albumin and proteoses (albumoses), which consequently are easily digested by the stomach. He attributes an anæsthetic and slightly stimulating effect to the alcohols and aromatic bodies formed, and the carbonic acid gas given off in the process of the proteid digestion. The mode of preparation of kumiss is also described by Sharp.

4. Menthol.

Blanc (*Revue de Thérapeutique*, Sept. 1, 1892) recommends menthol as a remedy for vomiting, and suggests that its combination with ipecacuanha will prevent the emetic action of the latter. Thus for dysentery he prescribes :—

R	Tinct. Ipecacuanha	...	...	...	12 grms.
	Menthol	...	...	...	0·25 grms.
	Saccharine	...	...	...	0·10 grms.
	Alcohol at 80° F.	...	...	...	40 grms.
	Syrup	...	...	...	120 grms.
M.	Sig. : a dessertspoonful every two hours.				

IX.—NEUROSES DEPENDENT ON CHRONIC GASTRIC CONDITIONS.

Tetany of gastric origin.

Ewald (*Berlin. klin. Woch.*, No. 22, 1893) reports a case of tetany associated with dyspepsia. The patient suffered from vomiting and gastric pain, and occasional diarrhœa. It was noticed that the attacks of tetany appeared when the motions became formed, and ceased on the occurrence of diarrhœa. So constant was this relation that the patient herself called attention to it. Ewald considered that the tetanoid attacks were produced by the action of some toxin formed as the result of the defective digestion. During the diarrhœa too small a quantity of the poison was absorbed to produce its toxic effect, whereas at other times, absorption being increased, tetanoid symptoms resulted.

Bouveret and Devic (*Centralbl. für klin. Med.*, p. 60, iii., 1893) conclude that tetany, the result of dilatation of the stomach, is due to a toxic substance allied to syntonin. The treatment of the condition consists in washing out the stomach. Alcohol should also be forbidden.

X.—CONSTIPATION.

1. General treatment.

Fleiner (*Berlin. klin. Woch.*, Jan. 16, 1893) classifies constipation as of two kinds, atonic and spastic. The former, due to insufficient peristalsis, should be treated by dietetic measures, mild aperients, water enemata, abdominal massage, gymnastic exercises, and faradisation of the abdomen.

The spastic form occurs in neurasthenic subjects, in hypochondriacs, and in women suffering from uterine troubles. It occurs also in lead poisoning.

The stools in this condition are passed in the form of cylindrical masses of small calibre, or in the form of scybala. Most benefit is derived from the use of large oil enemata. About 400 to 500 cbc. of warmed oil should be slowly (in fifteen to twenty minutes) passed into the rectum, the patient being on his back with the pelvis raised. If pain follows the injection, the bowels should be caused to act by a small water enema. The treatment may be continued on successive days if the intestine is full of fæces. Warm clysters, hyoscyamus, and belladonna may occasionally be useful. Massage is harmful in this condition.

Opium is the best remedy in the constipation resulting from lead poisoning.

2. The subcutaneous injection of purgatives.

Kohlstock (*Therap. Monatsh.*, p. 34, Jan., 1893) has experimented on the action of aloin, cathartic acid, colocynth, and citrullin when injected subcutaneously. The purgative effects of this method of administration were excellent, but the injections gave rise to such pain that the patients refused to submit further to the treatment. Kohlstock consequently points out that this mode of treatment cannot be practically employed.

He obtained most satisfactory results from the use of the same drugs in the form of rectal injections. No discomfort or bad effects of any sort followed their employment.

He recommends aloin and cathartic acid in mild cases, and colocynth and citrullin for the treatment of habitual constipation. The composition of the enemata used is given in detail.

XI.—STRANGULATED HERNIA.

J. B. Lagorsky (*Meditzinskoïe bhozrenië*, No. 33, 1892) gives the particulars of 4 cases of incarcerated inguinal hernia and 1 of umbilical hernia, in which, after taxis had failed to relieve, he administered $\frac{1}{4}$ grain of extract of belladonna every hour. In

every case spontaneous reduction took place after four to six doses of the drug. He attributes the effect to the powerful antispasmodic action of belladonna.

[This is, of course, anything but new treatment. The observer was unusually fortunate in curing *all* his cases by the use of the drug, although it is frequently of value.]

XII.—LEAD COLIC.

1. Olive oil.

Weill (*Centralbl. für klin. Med.*, p. 490, xxiii., 1893) recommends olive oil in the treatment of lead colic. One glass of the remedy was given daily for from four to eight days, and was followed by the best results. Intolerance of the remedy always disappeared in less than two days. Pain and other symptoms were relieved almost at once, and a purgative effect followed the use of the oil.

2. Antipyrin.

Devic and Chalin (*Centralbl. für klin. Med.*, No. 45, 1892) advocate the use of antipyrin in the milder cases of lead colic. In the severer cases they give belladonna.

XIII.—AN ANTISEPTIC CATHARTIC.

Eichler (*L'Union Médicale*, Aug. 18, 1892) employs the following prescription as a cathartic and intestinal antiseptic:—

R	Salol	...	...	...	...	...	1 dr.
	Castor oil	...	...	...	...	...	6 dr.
	Syrup of rhubarb	...	...	...	...	...	1½ oz.
	Cinnamon water	...	...	...	...	...	5 oz.

Powdered gum arabic, a sufficient quantity to make an emulsion.

One tablespoonful of the emulsion is administered every hour until a purgative effect is obtained. Otherwise one full dose may be given, and a disinfectant rectal injection, consisting of 15 grs. of salicylic acid to the pint of water, administered.

XIV.—BORBORYGMUS.

F. F. Jones (*Brit. Med. Journal*, p. 447, i., 1893) recommends the use of 15 minims of tincture of nux vomica, given in an ounce of water every morning before breakfast, for the relief of this condition.

XV.—INTESTINAL PHYSIOLOGY.

1. Pancreatic digestion of starch.

John Gordon (*Brit. Med. Journal*, p. 843, i., 1893) has

experimented with some of the recently introduced hypnotics with regard to their influence on the digestion of starch by pancreatic juice.

His conclusions are as follow :—

(1) That chloralamide, antifebrin, and antipyrin do not interfere, either in strong or weak solution, with the decomposition of starch into maltose and dextrin by pancreatic juice.

(2) That sulphonal and urethane, in weak solutions, retard slightly (two minutes) the decomposition of starch into maltose and dextrin by pancreatic juice, but that a stronger solution of these substances is without influence on the digestive process.

(3) That paraldehyde, in weak solutions, had a distinctly retarding influence of from four to eight minutes, and that, when 5 minims were added to 60 c.c. of mucilage of starch, retardation was complete in presence of 0.75 per cent. of pancreatic solution.

2. Relation between the alkalinity of the blood and intestinal absorption.

Castellino and Cavazzani (*Gazz. degli Ospitali*, July 1, 1893) have experimented on the effect on absorption from the intestine produced by altered physical and chemical conditions of the blood.

They have come to the following conclusions :—

(1) That alkalisation of the blood favours intestinal absorption.

(2) That alkalies would cause an increase in the rapidity of absorption by their effects on the leucocytes and cells lining the intestinal tract.

3. Estimation of ether-sulphuric acids in intestinal disorders.

Bartoschewitsch (*Centralbl. für klin. Med.*, p. 536, xxv., 1893) states that the absolute and relative quantity of sulphuric acid and aromatically combined sulphuric acid in the urine is lessened by diarrhœa, and that the proportion of the two bodies is likewise altered—the aromatically combined sulphuric acid decreasing in quantity more than the sulphuric acid.

The latter statement is true only as far as the diarrhœa produced by calomel is concerned ; in the case of that produced by castor oil, the aromatically combined sulphuric acid was increased. He distinguishes, therefore, two classes of purgatives—one which disinfects the intestinal contents, and the other which does not. In order that the relative proportion of the two kinds of sulphuric acid in the urine may be of diagnostic importance, it is necessary to perform control experiments under normal conditions.

XVI.—DIARRHŒA.

1. Functional diarrhœa.

Stein (*Centralbl. für Therap.*, April, 1893) urges the recognition of a purely functional diarrhœa, and advances the experiments of Moreau, Rindfleisch, and Cohnheim in support of his contention. The diarrhœa is accompanied by increased peristalsis, diminished absorption, and eventual increase of secretion, without the presence of blood or pus in the stools. Post mortem, the mucous membrane is not inflamed, but is injected and vascular—the condition present during ordinary digestion. For treatment he recommends the use of extract of belladonna three or four times daily, supplemented by some intestinal antiseptic, such as creasote, in order to check fermentative changes.

Good results are obtained from the employment of galvanic and faradic currents, and also from hydrotherapeutic measures.

2. Bilberries.

D. N. Nikolsky (*Vratch*, No. 49, 1892) recommends the use of bilberries in acute, subacute, and chronic gastric catarrh, and also in intestinal and gastro-intestinal inflammatory conditions.

He prepares a decoction as follows :—

A quarter or half a pound of dry bilberries is boiled for an hour or an hour and a half, in one or two pints of water. After straining through a piece of gauze, the decoction is allowed to cool. Two or three tumblerfuls are given daily, according to the patient's age and the severity of the attack. The improvement is rapid, and the diarrhœa ceases in from two to five days. The remedy is well borne and easily taken.

3. Dermatol.

Martin (*Brit. Med. Journal*, p. 179, i., 1893) treated a case of profuse diarrhœa with $\frac{1}{2}$ -drachm doses of dermatol, given every four hours. The diarrhœa ceased after twenty-four hours of the treatment. In a later paper (*Brit. Med. Journal*, p. 1,391, ii., 1893) he records another similar case in which the remedy was given four times a day, and cured the disorder after various astringent remedies had failed to do good.

Colasanti and Dutti (*Berlin. klin. Woch.*, 34, 1892) recommend dermatol as one of the best and most harmless drugs in the treatment of diarrhœa. They give it in the form of a powder, or when the diarrhœa is associated with pain it may be given suspended in a gum emulsion with a few drops of laudanum.

4. Iron salts.

W. Stanwell (*Lancet*, p. 697, ii., 1892) advocates the use of iron salts in the treatment of various forms of diarrhœa. The salt used in most cases was the citrate of iron and ammonia, but in

(6) It is of no value in dysentery.

(7) It constantly corrects the fetor of the stools.

[The early use of astringents in the treatment of diarrhœa cannot be too strongly deprecated. It must be remembered that diarrhœa is only a symptom, and the disease producing it must be treated if possible. This is usually catarrh, though possibly there may be a functional diarrhœa, as described above by Stein, dependent upon mere relaxation of the mucous membrane and its vessels. The catarrh may be due to irritating articles of diet or to cold, though when it is due to the latter cause it is generally accompanied by the accumulation of irritating secretions in the intestine. It is to the removal of such cause of irritation that the efforts of the doctor should first be directed, and this can best be accomplished by a dose of calomel. After this sedatives should be used, such as bismuth, bicarbonate of soda, and opium. Only when pain has disappeared, and with it all traces of pyrexia, should astringents be employed. The simplest of these are chalk and aromatic sulphuric acid. The preparations of iron, as mentioned above by Stanwell, are often of great use. But they ought to be confined to the treatment of chronic diarrhœa from atony without pain or fever, and the best preparation, in my experience, is the liquor ferri pernitratris in 20-minim doses.]

XVII.—DYSENTERY.

1. General treatment.

Brayton Ball (*Therap. Gazette*, Aug. 15, 1892, p. 518) remarks that the treatment of dysentery has hitherto been almost wholly symptomatic and empirical, and suggests also that the differences of opinion among various writers may be due to the fact that there are several distinct affections classed under the head of Dysentery. Then he reviews the methods of treatment in present use.

(1) *Ipecacuanha*.—The writer admits the great value of this treatment in certain cases, particularly in the initial stage and in those cases which occur in tropical and subtropical countries. This form of dysentery is commonly of amœbic origin, and Ball suggests that ipecacuanha may have some particular relation to amœbic dysentery (*see* "Year-Book" for 1893, p. 122). He himself prefers small doses every half-hour to the heroic treatment employed in India.

(2) *Opium*.—Much as this drug is used in America, Ball has formed an adverse opinion as to its value. Mild cases do just as well without it. The adynamic forms are extremely insusceptible to its good effects. It destroys the appetite, impairs digestion,

favours the retention of decomposing and fermenting products, and the writer does not think that it has any advantages commensurate with these ill-effects.

(3) *Purgatives*.—These are considered objectionable in adynamic cases, and unnecessary where the dejections are diarrhœal rather than dysenteric. But in acute cases of dysentery they are of use in cleansing the intestinal canal from irritating matters, and also have a sedative effect, and relieve tormina. They should be administered only every second or third day.

(4) *Calomel*.—Of this drug the writer declares that he has had no experience, but he believes that the disuse into which it has fallen is probably an over-reaction after its former misuse.

(5) *Corrosive sublimate* has been recommended by many authors, and seems to have a specific effect on the lower bowel, but in what way is unknown. It should be given in small doses ($\frac{1}{120}$ to $\frac{1}{60}$ of a grain) every hour.

(6) *Bismuth subnitrate*.—In large doses this drug is of use when the stools have become diarrhœal in character, but is of no value in the early stages.

(7) *Salol* has been used with good effect, though opinions seem to differ as to its value.

(8) *Astringents*, such as nitrate of silver, pernitrates of iron, tannic and gallic acids, catechu, krameria, and hæmatoxylon, are harmful.

(9) *Local treatment*.—Large enemata of plain water, either warm or ice-cold, are of great value in acute dysentery. Three to four pints are necessary to irrigate the whole colon, and can best be administered after an action of the bowels. Solutions of corrosive sublimate, nitrate of silver, quinine, alum, and creolin have been strongly recommended. For chronic dysentery, large enemata of nitrate of silver, 1 or 2 grains to the ounce, are most valuable. The administration is usually required once or twice daily for several days. In administering enemata in dysentery, care should be taken that only a low hydrostatic pressure be used, for fear of rupturing the ulcerated intestine.

(10) *Diet*.—Milk should be given with care, and the stools carefully watched for the presence of undigested curd. In chronic dysentery a liberal allowance of meat is necessary, and best of all is scraped meat.

2. Morphia.

Aufrecht (*Therap. Monatsh.*, July, 1893) warmly advocates the use of morphia in the treatment of this disease, and during the early stages of the disorder gives as much as $\frac{3}{10}$ of a grain two or three times a day. He strongly condemns the use of intestinal

injections during the early stages, but with the subsidence of acute symptoms he employs weak astringent solutions of perchloride of iron or nitrate of silver.

3. Enemata of tannic and boracic acids.

E. A. Liebersohn (*Vratch*, No. 38, 1892) gives the details of 2 cases of severe acute dysentery which he treated by hot (36° C.) enemata of tannic and boracic acids. The enemata were given every three hours, and were composed of $\frac{1}{4}$ of a fluid lb. of a 4 per cent. solution of boracic acid, 10 grains of tannin, $3\frac{3}{4}$ drops of tincture of opium (Russian Ph.), and 1 or $1\frac{1}{2}$ tumblerful of hot boiled water. This was retained in the bowel for from one to two minutes. The results obtained went to show :—

(1) That the injection quickly arrested intestinal hæmorrhage.

(2) That its use was quickly followed by a natural character of the stools.

(3) That pain and tenesmus were quickly relieved.

(4) That the course of the disease was materially shortened, convalescence being established in a few days.

4. Ipecacuanha de-emetinisata.

Kanthack (A. A.) and Caddy (A.) (*Practitioner*, June, 1893) have experimented with ipecacuanha deprived of its emetin. As result of experiments by themselves and others, they have come to the conclusion that the de-emetinised drug has no emetic or nauseating effects, and that it possesses the full anti-dysenteric properties of ipecacuanha. The doses employed varied from 20 to 60 grains.

5. Lactic acid.

Lojkin (*Lemsky Vratch*, Nos. 49 and 50, p. 775, 1892) advocates the use of lactic acid in dysentery and acute dyspepsia. He treated a case of dysentery with half-tumblerful doses, twice daily, of a 2 per cent. solution. The treatment was followed in nine days by complete recovery. The diarrhœa occurring in 2 cases of acute dyspepsia was checked by two doses of the solution taken in the course of twenty-four hours.

[Although the matter is not yet certain, the opinion is gaining ground that dysentery is due to the action of various germs on the large intestine. Of these, the principal are the bacterium coli commune and the amœbæ, a paper on which, by Councilman and Lafleur, was abstracted last year. The following short papers are contributions to this subject.]

XVIII.—CAUSES OF DYSENTERY.

1. Amœbæ.

Kovacs (*Centralbl. für klin. Med.*, p. 719, No. 34, Aug., 1893)

has come to the following conclusions:—That the amœba coli in animals is pathogenic and the cause of an enteritis of the large intestine. It is not yet certain that it is the cause of the more severe lesions, such as ulceration and necrosis of the mucous membrane.

J. Harold (*Brit. Med. Journal*, p. 1,029, ii., 1893) gives the details of a case of dysentery in which the amœba coli was found repeatedly in the stools.

2. *Bacillus coli communis*.

Park (*Annals of Surgery*, vol. xviii., No. 3, Sept., 1893) gives an exhaustive description of the bacillus coli communis and of its pathological importance in infective enteritis, cholera nostras and infantum, and the wasting enteritis of children and adults. He also discusses its relation to dysentery, and gives an account of its general distribution and the disorders with which it may be associated.

Hartmann and Lieffring (*Bull. de la Soc. Anat. de Paris*, Fasc. No. 3, 1893) conclude, as the result of a microscopical and bacteriological inquiry, that the bacterium coli commune plays a part in the causation of hæmorrhoidal phlebitis and of some forms of perineal abscess. They found the bacterium in piles which were inflamed, and not in those which were not.

XIX.—APPENDICITIS.

Graham (*Therap. Gazette*, Dec. 15, 1892, p. 797), after reviewing the various methods of treating this affection medically, gives the following as his own line of treatment:—Absolute rest and liquid diet are essential. If there is a history of constipation, or impacted fæces are discovered, small doses of a concentrated solution of a saline cathartic are to be given every half hour or hour, followed by an enema of 2 ounces of magnesium sulphate in a quart of warm water. If there be nausea or vomiting, small frequently repeated doses of calomel are to be substituted for the saline purge. He suggests the following combination:—5 grains of calomel, 15 grains of bicarbonate of sodium, and 5 grains of sugar, stirred in a goblet of milk, and a tablespoonful given every half hour. If there be not much pain the saline treatment should be continued, but at less frequent intervals. If pain be severe, morphia or atropine should be administered instead of the salines; but in any case Graham advises that the saline treatment be first tried, since the opium masks the symptoms and renders it difficult to determine when surgical interference is necessary.

Locally, leeches and the ice-bag or hot fomentations are of

service, while vomiting is best treated by ice and iced carbonated waters internally and mustard sinapisms externally. Prostration calls for stimulants and tonics.

For fear of relapse the patient should be kept in bed until all signs and symptoms have disappeared, and hardness remaining at the seat of the disease should be treated by blisters or massage if it is certain no abscess has formed.

XX.—INTESTINAL ANTISEPSIS.

1. Estimation of.

Rorigi (*Centralbl. für klin. Med.*, p. 308, xlv., 1893) points out that the estimation of the amount of aromatically combined sulphuric acid in the urine forms a useful guide to the intensity of the fermentative processes taking place in the intestinal tract. He shows that the greater the intestinal antiseptics the less aromatically combined sulphuric acid appears in the urine, and *vice versa*. The excretion of this substance by the urine is the outcome of the action of bacteria on albuminous bodies, which results in the formation of phenols and allied bodies and their consequent elimination by the kidney in this form.

2. Salol.

E. Mansel Sympson (*Practitioner*, p. 102, Aug., 1893) has experimented with salol with regard to its influence on peptic and pancreatic digestion. He found that the drug appreciably delayed both forms of digestion under artificial conditions, but he experienced no ill effects on appetite or digestion after taking salol in 5-grain doses three or four times a day. Sympson has obtained excellent results with salol in cases of duodenal indigestion, in which he gives it in 10-grain doses every four hours, having one to two hours previous to its use administered 4 or 5 grains of calomel.

He has also found the drug exceedingly useful in cases of ordinary and infective diarrhoea. He administers it in 10-grain doses every four hours at first, then every six hours, and finally three times a day. It was always given after food. Sympson attributes the beneficial effects following the use of salol to its antiseptic action.

[Antiseptics have been used for many years in the treatment of disorders of the stomach. Recently this treatment has come still more into vogue, and especially has been applied to intestinal disorders with the hope of destroying disease germs finding access thither. No one who has seen their effects can doubt the good

which ensues from the use of antiseptics of various kinds, particularly in the treatment of gastric and intestinal flatulence. But it has puzzled the reviewer to explain their action. An ordinary meal taken by a healthy subject will measure fully 20 ounces. But take it at only 10 ounces, or say, for purposes of calculation, 5,000 grains, which will certainly be within the mark, some of this meal—that is, its fluid constituents—will be very rapidly absorbed; but the bulk of this fluid will probably be more than made up by the digestive juices poured out. If we add to this bulk, as is customary, one or two drops of carbolic acid or creasote, we have a strength of the antiseptic of 1 in 5,000 or 1 in 2,500 respectively. If we use perchloride of mercury, the dose employed will be $\frac{1}{30}$ of a grain, giving an antiseptic solution of the strength of 1 in 150,000. In the laboratory, solutions of these strengths are of no effect, and we must remember that in the stomach not only are the solutions, for the reasons mentioned, probably of far less strength, but the bacteria are under the most favourable conditions of heat and moisture for their action. In the intestine the conditions for the antiseptic action of the remedies are still more unfavourable, since the bulk of the contents is still greater, and it is almost inconceivable that the remedies can act as antiseptics so low down as the large intestine, for which purpose they are frequently used. The mercurial preparations certainly may act by promoting the flow of bile into the intestine, which itself is a strong antiseptic; but for the other remedies, and for all such remedies applied to the stomach, the explanation of their action is obscure. I have no explanation to give, but it seems a point worthy of the attention of inquirers; yet I repeat there can be no doubt of the practical value of these drugs.]

XXI.—ANTHELMINTICS.

1. Tapeworms.

Stephens (*Therap. Monatsh.*, p. 48, Jan., 1893) advocates the use of liquid extract of cascara sagrada in the treatment of tapeworms. He gives the drug in syrup of orange three times a day.

2. *Tænia nana*.

Mertens (*Berlin. klin. Woch.*, Nos. 44 and 45, 1893) discusses the symptoms produced by the *tænia nana*. The removal of the parasite is most reliably brought about by extract of filix mas; he considers santonin and thymol altogether unreliable for the purpose.

3. *Tænia sagenata*.

Storch (*Centralbl. für d. Med. Wiss.*, p. 398, xxiii., 1893) speaks

highly of the seeds of cucurbita maxima as a means of getting rid of this parasite. The remedy is given in the form of a paste, followed by a purgative an hour later.

The Practitioner (p. 303, April, 1893) gives as an anthelmintic draught :—

R Olei terebinthinæ	...	...	...	...	...	3iss
Mist. amygdalæ	...	...	...	...	...	3iss

Misce et fiat haustus.

4. *Anchylostomum duodenale*.

Stynsey (*Brit. Med. Journal*, p. 1,205, ii., 1892) has issued a report on the subject of anchylostomiasis. He recommends the following treatment with the view of expelling the parasite from the alimentary canal. After mild purgation he administers 30 grains of powdered thymol rubbed up with an equal quantity of sugar of milk, the combination to be shaken up in water. The first dose should be given on an empty stomach in the morning, and should be followed two hours later by a second dose. If ova are found in the stools eight days later, the procedure must be repeated. Extract of male fern may be employed in the same way in 1 or 2 drachm doses.

Thymol must not be given in solution, as if absorbed in any quantity it is highly toxic.

P. Sonsino (*Lancet*, p. 1,156, ii., 1892) discusses the value of thymol as an anthelmintic. He comes to the conclusion that it is an effective agent generally against anchylostoma, but very uncertain as regards ascaris lumbricoides, oxyuris vermicularis, and trichocephalus dispar, and entirely ineffective against tænia nana.

He thinks the drug is best administered in the form of a powder, in wafers or cachets.

5. *Oxyuris vermicularis*.

Nicholson (*Lancet*, p. 17, i., 1893) recommends that children affected with this parasite should be bathed twice daily, the underclothing changed frequently, the nails kept short, and the fingers dipped as often as possible in an infusion of quassia. The anus should be smeared night and morning with an ointment composed of nitrate of mercury and a little extract of quassia, and the patient should sleep over a draw sheet. The bowels should be opened daily by means of a powder consisting of mercury, with the addition of chalk, rhubarb, and soda. Santonin should then be given every other night for a week. The general health should be attended to by means of exercise and a generous diet, together with the administration of citrate of iron and strychnine after meals.

Nicholson has found a suppository composed of extract of quassia (1 to 3 grains) and cocoa butter of great service, and it can be introduced at night without causing the child any discomfort.

Nicholson considers injections less serviceable on account of the difficulty of their proper administration. Should they be used, he recommends one composed of menthol (1 grain), dissolved in 1 ounce of olive oil. He further advises the isolation of the patient while the oxyurides are being passed. The treatment should be continued until all signs of the worm have disappeared.

XXII.—HEPATIC ASCITES.

1. General treatment.

W. B. Cheadle (*Brit. Med. Journal*, pp. 1,102, *et seq.*, ii., 1892) discusses the whole question of the treatment of hepatic cirrhosis and the ascites so commonly associated with it.

Cheadle, after pointing out the pessimistic views held by the profession with regard to the successful treatment of ascites due to hepatic cirrhosis, proceeds to show that a cure is possible under certain conditions.

These conditions are :—

- (1) That the liver is large and hard.
- (2) That sufficient healthy liver tissue remains to carry on the functions of the organ. (Cheadle estimates that half the liver tissue is sufficient to do this.)
- (3) That a sufficiently free anastomosis exists between the portal and systemic venous system to relieve the portal circulation.

Cheadle explained that the objects of treatment were :—

- (1) To prevent the increase of fibrosis.
- (2) To remedy the atrophy and anæmia.
- (3) To relieve the injurious pressure of the ascitic fluid on the abdominal and thoracic viscera.

The first two objects were easily obtained by :—

- (1) Abstention from alcohol and stimulating food, and the administration of iodide of potassium in syphilitic cases.
- (2) The exhibition of nutritious digestible food, with iron and acid bitter tonics.

Cheadle considers the use of purgatives for the removal of hepatic ascites as dangerous, and the use of diuretics as futile for the object in view. He urged that the only effectual plan of removing the ascites was by early and, if necessary, repeated paracentesis of the abdomen. The operation, if done early, and with antiseptic precautions, was a perfectly harmless one. He

suggested the use of iodide of potassium in conjunction with the operative procedure, and gave the details of several cases successfully treated in this way. In the discussion which followed the reading of Cheadle's paper, **Von Schroetter** expressed his complete agreement with him in regard to the use of purgatives, but thought that diuretin was a very effective and safe drug to use for the removal of hepatic ascites. If this failed, he considered paracentesis, followed by tight bandaging, the best treatment. **Semmola** advocated the use of a milk diet. In 24 of his cases complete cure resulted under this treatment. He considered milk a specific in the treatment of ascites, but could not explain the *modus operandi*. **Samuel West** considered that the only satisfactory way of removing ascitic fluid the result of hepatic cirrhosis was by paracentesis, and he thought that rapid removal of the fluid, followed by an abdominal bandage, the most satisfactory procedure. **Bristowe** agreed with Cheadle on the subject of early and repeated paracentesis. **Mackey** had found bitartrate of potash effective in cirrhosis, especially when combined with iodide of potassium. He thought diuretin worthy of a more extended trial.

2. Bitartrate of potash.

Sasaki (*Berlin. klin. Woch.*, p. 1,184, No. 47, 1892) reports 8 cases of chronic intestinal hepatitis treated with full doses of potassium bitartrate. The ascites was greatly relieved in all cases. An average dose of the drug would be from $2\frac{1}{2}$ to 5 drachms daily, the best being that which will cause two to three movements of the bowels. If the accumulation of fluid is very great, Sasaki recommends paracentesis in addition to the administration of the bitartrate. The drug is well borne, and may in many cases be given for months. He ascribes its good effects to its laxative and diuretic action.

3. Diuretin.

R. del Valle y Aldabelle (*Rev. de Med. y Clin. Pract.*, Nov. 7, 1892), as the result of experiments with diuretin, concludes that in ascites of hepatic origin it is seldom of any use.

4. Calomel.

Palma (*Therap. Monatsh.*, March, 1893) advocates the use of calomel in cases of ascites resulting from disease of the liver. He gives the result of this treatment in a series of 8 cases of disease of the liver, including patients with and without ascites. Four out of 6 cases suffering from ascites were greatly benefited, while two cases died under treatment from advanced disease and cholæmia. In the 2 remaining cases in which ascites was not present some improvement in the symptoms

was manifested. Palma attributes the improvement obtained to the direct action of the calomel on the liver and kidney. In all but 2 of the foregoing cases the treatment was followed by an increased flow of urine. The calomel was given in doses of from $4\frac{1}{2}$ to 9 grains daily for three days, and then discontinued for a similar period. Two such periods sufficed in the cases quoted.

XXIII.—HYPERTROPHIC CIRRHOSIS OF THE LIVER.

Sior (*Berlin. klin. Woch.*, Dec. 26, 1892) treated a case of hypertrophic cirrhosis of the liver with calomel. The patient, aged thirty, was admitted suffering from jaundice and loss of strength. The liver extended three fingers' breadth below the costal margin in the nipple line. There was no ascites or œdema. The urine was bile-stained. There was no history of alcohol, and treatment by iodide of potassium had failed to produce any beneficial result. Calomel was given in doses of 0·05 grain six times a day for three days and then discontinued for a similar period. The treatment was followed by immediate and rapid improvement. It was continued for three months, at the end of which time the jaundice had disappeared, there was no bile pigment in the urine, and the stools were pale yellow in colour. Nutrition was excellent, and the strength greatly improved. The liver extended one finger's breadth below the costal margin in the nipple line.

DISEASES OF THE KIDNEYS, DIABETES, ETC.

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1. Synopsis.

Although the contributions to renal and urinary therapeutics this year are scanty, still two points of great interest have been touched upon—one referring to the experimental researches of **Minkowski** on the effect of pancreas removal in causing diabetes mellitus; the other questioning the advisability of the so-called “milk diet” in albuminuria, especially in the chronic form. With regard to diabetes, clinical observers have for long discriminated between two forms, one running a comparatively rapid course, and another more protracted—the first generally found in patients of a neurotic type, the milder associated with some constitutional taint, such as gout, rheumatism, etc. More recently (*vide* “Year-Book,” 1893, pp. 137, 138) these two forms have been considered as consisting (1) of an alimentary diabetes, which could be controlled by diet, and either run a mild course throughout, or else, this control being lost, the disorder may pass into (2) the *general form*, in which either from the onset, or after a continuance for a while of the alimentary form, a restricted diet fails to remove entirely the sugar from the urine. This latter form, which in its inception is common in cases of neurogenic origin, is especially characteristic of pancreatic diabetes. The latest researches of Minkowski seemed to have established this clinical distinction on an experimental basis, as he shows very conclusively that there is a marked difference in the diabetes induced by phloridzin and that brought about by removal of the pancreas; the one being alimentary in its character, the other brought about by destruction of the pancreatic gland, causing some profound metabolic defect. He also conclusively shows that mere obstruction of the pancreatic duct, or the preventing the passage of its secretion into the intestines, will not cause diabetes, but only the extirpation of the gland, and this, he considers, depends rather on metabolic disturbance, which interferes with a specific

action of the gland itself in the elimination or destruction of sugar, than on the absence of any special element in the pancreatic secretion (section 6). This experimental fact is also borne out by clinical observation, since considerable, if not complete, destruction of the gland has been noted in cases of pancreatic diabetes (*vide* also section 21, abstracts (1)—(5)), and explains the unsatisfactory results hitherto obtained by the administration of either raw pancreas or pancreatic juice; the slight and variable improvements noted by some observers being probably due to improved nutrition and alimentation, which so generally follows on the administration of digestive ferments.

The other interesting point to notice is the discussion that has arisen with regard to the question of diet in Bright's disease, which will, no doubt, have the effect of producing considerable modification in the indiscriminate and routine prescribing of the so-called "milk diet" in all cases of albuminuria. The profession, in this matter, have undoubtedly advanced before their teachers, and it is unfair to put the blame on "nephrologists," as **Donkin** (in a letter to the *Lancet*, May 13) did. For neither in their published works nor teaching can they be made responsible for the too general application of the theoretic views on which this diet is advocated. Indeed, in the latest published statement by a distinguished "nephrologist," **Robert Saundby** ("Lectures on Bright's Disease," p. 271) states that he is convinced that absolute milk diet is not only unnecessary and extremely distasteful, but positively harmful. I have also expressed myself much in the same way ("Diseases of the Kidneys," p. 263), and insisted on the importance of regulating the *quantity* of the food as greater than rigidly supervising the *quality*. Again (in the "Year-Book," 1886, p. 59), when the question of "milk diet" first came forward for discussion, it was pointed out that, though the use of an exclusive milk diet proved of value in some cases, there were others in which it might be found not to be advisable. In coming to a conclusion about this debated point, it will be well to bear in mind the difference that exists between acute and chronic nephritis. So far, the value of the milk diet has not been questioned as regards the acute or subacute forms, in which, no doubt, it has proved of service. But in the chronic form of the disease we have other factors to deal with, in degenerated vessels, a failing heart, and the effects of long-standing malnutrition. Here a more generous diet is called for; but in administering it, we must not forget the danger to the patient of cerebral hæmorrhage in increasing the vascular tension by a meat diet. The rule in these cases will be found, I think, in a

close and frequent examination of the heart and pulse, which will furnish a more satisfactory guide to the requirements of the patient than can be learned from estimations of albumen or urea. Thus, so long as the pulse has a high tension and the left ventricle a strong impulse, a light, not necessarily a low, diet should be insisted on. On the other hand, when the pulse is failing and the heart muscle degenerating, more liberal diet is called for, and must be judiciously given.

Of points of minor interest among this year's contributions may be mentioned **Sir William Roberts's** suggestion of inducing lactic acid fermentation in the bladder in cases of cystitis arising from ammoniacal decomposition by the injection of *bynin*; also the correspondence arising from a report of **Sir Edward Sieveking** on a case of diabetes mellitus, with low specific gravity of urine; whilst **Godlee's** communication to the Royal Medical and Chirurgical Society of the distinction between the gangrene arising in diabetes from arterial degeneration and from peripheral neuritis is deserving of the fullest consideration in respect of the surgical treatment of this affection.

2. Diet in chronic albuminuria.

Ralfe (*Lancet*, vol. i., April 8, 1893), in a paper read before the Medical Society, Feb. 20, 1893, on some clinical varieties of chronic albuminuria, chiefly with regard to prognosis, stated that owing to the improved diagnosis of Bright's disease, and especially to its earlier recognition by the systematic testing for albumen now almost universally adopted, and also to improved hygienic and dietetic management of the disease, chronic albuminuria had lost much of its dread significance; and that we might reasonably hope to prolong life far beyond the hopes of physicians of two decades past. With regard to diet, he remarked that the profession is much indebted to Sir George Johnson's teaching and his advocacy of a non-stimulating diet in inflammatory affections of the kidneys. This of late years has taken the form of the "milk cure"—*i.e.*, feeding the patient absolutely on milk, or, if this is not entirely possible, with the addition only of the slightest modicum of other food, and that of a non-stimulating character. But, in spite, however, of its general adoption by the profession, there have been some doubts expressed whether its administration is equally useful in all cases, or even if it may not be deleterious in some. With a view to obtaining information on this point, **Ralfe** has instituted for some time observations on the effect of a milk diet on different forms of renal albuminuria. These observations consisted in making an analysis of the patients' urine on admission into hospital and afterwards gradually putting them on milk diet

(three or four pints daily). This was continued for four weeks, a weekly analysis being made of the amount of urine passed, and the excretion of urea, albumen, and total solids. At the end of four weeks a mixed diet was gradually resumed and another analysis made. As a result, in 5 cases of acute and subacute nephritis with dropsy, an increase of urinary water, of urea, and a diminution of albumen, was observed, which, when the ordinary diet was resumed, showed a tendency to relapse. In 2 cases of albuminuria associated with cardiac complication, a slighter improvement was manifested. With 1 well-marked case of albuminoid degeneration the milk diet was distinctly unfavourable, so that after a fortnight's trial it had to be discontinued and a more generous diet adopted, with distinct benefit to the patient. In 3 well-marked instances of contracted kidney with vascular degeneration the milk diet was not at all well borne. In 1 case, on the second day of its trial, the patient was seized with severe uræmic convulsions; and in the other 2, aggravation of already existing uræmic troubles became more pronounced on a persistence of an enforced milk diet; whilst in all 3 an improved condition was noticed when a more solid dietary was resumed. From these observations Ralfe has come to the conclusion that the best results are obtained from the "milk diet" in cases of acute and subacute nephritis in which the diuretic action of the lactose in the milk increases the flow of urine and relieves the dropsy; whilst in cases where degenerative changes have taken place, with an already failing heart, it is better to give a more solid and more stimulating food than milk, care being taken at the same time that it is easily assimilable and not highly nitrogenous. The employment, he thinks, of an exclusive milk diet in chronic nephritis is positively injurious after degenerative changes have manifested themselves; yet in the earlier or more acute stages of the disease it must form the basis of treatment. **Hale White** (*Lancet*, April 29, 1893) read a paper before the Royal Medical and Chirurgical Society on "The Influence of Various Diets upon the Composition of the Urine and the General Condition of Patients suffering from Chronic Bright's Disease." He argued that all the *a priori* reasons urged in favour of milk or any other particular form of diet were fallacious, and that consequently the only way to attack the problem was carefully to observe the condition of the urine and the state of the patient upon different diets. It was necessary not to draw observations from too few cases. He had, therefore, taken 10 chronic cases of Bright's disease in which the urine had been carefully analysed for many weeks. In each case notes were kept as to the general condition

of the patient. The following diets were tried:—Milk, three pints a day, containing 1,076 grains of proteid; farinaceous, consisting of bread and milk, containing 1,187 grains of proteid; full diet, consisting of bread, butter, milk, meat, and rice pudding, containing 1,522 grains of proteid; and sometimes the effect of adding fish, eggs, or more meat was tried. The following results were reached:—(1) *Quantity of urine*. Usually more urine was secreted upon farinaceous or milk diets than upon full diet. (2) *Specific gravity*. The diet had no certain influence on this, but on the whole it was lower on milk and farinaceous food than on full diet. (3) *Quantity of albumen*. The figures showed that nearly always the albumen passed was more on milk diet than upon farinaceous, and less upon full diet than upon either milk or farinaceous diet. Even in the rare instances in which the maximum quantity was passed upon full diet, the excess of proteid in the full diet more than compensated for any extra loss of albumen, so that patients always best avoided loss of albumen by a full diet. (4) *Quantity of urea*. The influence of diet on this was most uncertain. (5) *General condition of the patient*. The cases showed that full diet was not more liable to lead to uræmia than any other. In fact, in one patient full diet seemed to ward off an attack. The patients always felt and seemed much better and stronger on full diet. Hale White, therefore, advises full diet, for since it did not lead to uræmia—nor was it harmful in any way—it saved the albumen, and the patients liked it and improved on it, whilst they greatly disliked other diets. Donkin (*Lancet*, May 13, 1893) supports the view that a fuller diet should be given in cases of chronic Bright's disease than that afforded by milk, and has noted considerable improvement in such cases on the substitution of ordinary good living for the theoretically strict diet of nephrologists. But he would exclude from this free diet those patients with dropsy, much albuminuria, and marked oliguria, and those suffering from acute or subacute nephritis.

Baginsky (*Arch. für Kinderheilkunde*, p. 161, vol. xv.) has come to the conclusion, from observations made on children suffering from renal disease in different stages whilst chiefly on milk diet, that there is a diminished function as regards nitrogenous excretion, and also that the chief part of the nitrogen is excreted as urea. No accurate relationship, however, can be determined between the specific gravity of the urine, its nitrogen excretion, and its quantity. Indeed, sometimes the nitrogenous excretion may be exaggerated so that the tissue nitrogen appears in the urine.

May not this nitrogenous excess be due to a previous accumulation in the organism, and released under improved conditions of elimination?

3. Oxygen in Bright's disease.

Reynolds (*Brit. Med. Journal*, Oct. 29, 1892) records an instance in which oxygen inhalation carried a patient through a crisis of cardiac failure due to Bright's disease. He found the patient, aged sixty-four, propped up in bed, with an anxious countenance and shallow, rapid respiration; the extremities cold, pulse too rapid to count, very small and irregular; the arteries rigid, respirations sixty per minute. Within thirty minutes of beginning the oxygen inhalation the respirations had fallen to forty-five, the pulse was 120 and stronger, and the leaden hue of the face gave way to a pale rosy tint. After three inhalations at intervals of four hours the respirations were forty a minute, and the patient slept, which she had not done for some days previously, and immediate danger was over. Inhalations were continued at increasing intervals for a week, each being accompanied by a distinct improvement in strength.

4. Albuminuria of uric acid and oxaluria.

Da Costa (*Amer. Journ. Med. Sci.*, vol. cv., 1893) describes what he considers as the symptoms of Bright's disease associated with uric acid and oxaluric tendencies. The urine is about normal in amount, but the specific gravity is high (1,022-28-36) and deposits urates and oxalates. Casts are scanty, often absent, most hyaline or epithelial, rarely granular, never fatty. There is usually dyspeptic trouble, want of appetite, flatulence, and a weak intermittent pulse; definite nervous symptoms, as headache, listlessness, sleeplessness, and vertigo; rigidity of vessels rare, as well as dropsy or eye affections, and no cardiac hypertrophy. It may be found at all ages.

5. Morphine in cardiac albuminuria.

Hervouet (*Revue Gén. de Clin. et de Thérap.*, No. 4, 1892) considers that morphine injection is not contra-indicated in passive hyperæmia the result of heart disease, since by relieving dyspnoea and soothing the nervous system it also often stimulates the patient, and so succeeds in aiding the action of other medicines.

It has been shown, moreover (*vide* "Year-Book," 1893, section 6), that the subcutaneous injection of morphia may be advantageously resorted to in the uræmia of chronic nephritis.

6. Diabetes mellitus and extirpation of the pancreas.

Minkowski (*Archiv. für Exp. Path. u. Pharmacol.*, pp. 85-189,

vol. xxxi.), as the result of experimental research, has arrived at the following conclusions in a lengthy contribution, of which we must endeavour to give the main facts in a brief abstract. First, as regards the causes of diabetes after pancreas extirpation. This he considers depends on metabolic disturbance rather than on absence of the pancreatic secretion. As ligature of the pancreatic duct does not cause diabetes, it cannot therefore depend on diminished elimination of pancreatic agents. Nor does pancreatic diabetes depend on any disturbance of the renal function such as may be assumed takes place in phloridzin diabetes. He dissents from the view taken by Lépine that after pancreas extirpation a glycolytic ferment disappears from the blood (*vide* "Year-Book," 1892, section 16), but assumes that the pancreas fulfils a specific action in the elimination and destruction of sugar, the nature of which is not yet determined. Minkowski also draws attention to the changes of various carbohydrates in diabetic animals. Thus he shows that after small doses of *lævulose* only minute quantities appear in the urine; it is almost lost in the organism. On the contrary, *inulin* produces a marked effect on the urine in causing glycose elimination, but *lævulose* does not appear. In giving a large dose of *lævulose* a portion of it passes off unchanged, whilst a part is converted into dextrose. From this he infers that the lævo-rotatory carbohydrates are partly used in the organism and partly converted into dextrose. No other carbohydrate besides glycose appears in the urine. Cane-sugar does not pass into the urine, nor as *lævulose*, but it decidedly increases the elimination of glycose. Milk-sugar breaks up into galactose and dextrose, and both cause an increase of glycose in the urine, an important point with regard to the use of milk for diabetic patients. After pancreas extirpation larger quantities of glycogen were found in the leucocytes of the blood or pus than before. Lactic acid exists in only small quantities in the muscles of diabetic animals; and untoward results of the operation, such as peritonitis, gangrene of the duodenum, and abscesses, render the effect of the removal of the pancreas nugatory by preventing sugar elimination, suggesting that pathogenic bacteria may decompose the sugar. The distinction between pancreatic and phloridzin diabetes is clearly defined. Phloridzin does not cause diabetes by any action on the pancreas, but rather by action on the kidneys. In pancreatic diabetes the amount of sugar in the blood is greatly increased, but not so in that produced by phloridzin. In pancreatic diabetes *syzygium jambolium* was found to have absolutely no effect.

The practical outcome of physiological experiment and clinical

observation with regard to the influence of the pancreas in the causation of certain forms of diabetes mellitus has been to direct the attention of practitioners to the probable good result that might be attained by feeding patients with either pancreatic juice, pancreatic extract, or raw pancreas. Thus **Mansell Jones** (Brighton), in a letter to the *Brit. Med. Journal*, Jan. 7, 1893, observes that as juice of the thyroid gland appears almost as a specific in myxœdema, pancreatic juice might be given a fair trial in diabetes, as in most cases the disorder appears due to disease or functional derangement of the pancreatic gland.

Hector Mackenzie (*Brit. Med. Journal*, Jan. 14, 1893) states that in two patients benefit resulted from the treatment. They both had lost to a great extent their feeling of lassitude. Their thirst had lessened, and they passed smaller quantities of urine. The specific gravity and relative amount of sugar in the urine were not affected.

Neville Wood (*Brit. Med. Journal*, Jan. 14, 1893), from the observation of two cases, has little hope that diabetes can be influenced by pancreatic preparations in the same way that myxœdema is by thyroid juice.

Hale White (*Brit. Med. Journal*, March 4, 1893), from two cases, came to the conclusion that it is very doubtful whether feeding on fresh pancreas, or the subcutaneous injection of liquor pancreaticus, is of any benefit in diabetes mellitus. Neither appears to have any influence on the quantity of the urine, its specific gravity, or the urea. Perhaps the sugar may be slightly decreased, and the body-weight and strength increased. One of the disadvantages attending pancreas administration is to cause erythema, with fever and sore-throat.

Knowsley Sibley (*Brit. Med. Journal*, March 18, 1893) notes a case which improved under the administration of pancreatic juice, which was chiefly marked with regard to the diminished quantity of urine passed.

Wills (*Brit. Med. Journal*, June 17, 1893) reports a case which coincides with Hale White's conclusion, "that there is little evidence of benefit from its use." "In two cases under my care," Wills writes, "in the London Hospital, one of which was briefly referred to in the *Clinical Journal*, Aug. 8, 1893, the use of the raw gland gave certain definite but not continued results. Thus in the case quoted, which had been in hospital over three months, having an average sugar excretion ranging from 140 to 220 grammes, the first week of the administration of raw pancreas brought it down to 60 grammes; it then began to run up again, when an increase in the dose again brought it down. Also once

during Bank Holiday, when the gland could not be procured, the sugar increased, and was again somewhat reduced when the pancreas was again procurable. I was struck, however, with the fact that whatever good effect was gained was soon lost, as if a further increase in the amount of gland ingested was required. The mere ingestion of pancreas or pancreatic juice is therefore not likely to arrest the excretion of sugar, since ligation of the pancreatic duct is not sufficient to produce it. In future observations—and many more are required—it seems to me that the form of diabetes under treatment should be rigidly defined, whether it is of that foudroyant type which so often characterises ‘pancreatic’ diabetes, or the milder form, which is so conveniently designated as ‘alimentary’; and when possible a distinction should be drawn between the action of the gland and the secretion in each form. Again, recognising that the pancreatic secretion is not concerned in the causation of glycosuria, a fair trial should be made of the injection into the blood of glycerine extracts of pancreatic gland.”

7. Drugs in diabetes.

F. P. Henry (*Internat. Med. Magazine*, July, 1892) remarks that in most cases, or, at all events, those in an early stage of the disease, the sugar will disappear if the patient is placed on an exclusive proteid diet, but that, if persisted in, digestive disturbances will arise, and the glycosuria reappear. A greater tolerance to an absolute proteid diet has been obtained by Professor Bufalini by the administration of thymol, by its action as an intestinal antiseptic. When albuminuria coexists, an exclusive meat diet cannot be maintained, and then the diet should consist largely of milk and butter-milk. Different opinions exist as regards the use of milk in uncomplicated diabetes; but when the disease is complicated with nephritis, the least injurious food, he thinks, is milk. When an undoubted connection exists between gout and diabetes mellitus, good results follow an alkaline treatment, such as the alkaline lactates, as recommended by Cantani. Opium is a drug of undoubted efficacy, not only in relieving the sense of hunger and thirst, but by having a positive effect on the excretion of sugar.

8. Salol in diabetes.

Professor Nicolaiei (*Therap. Monatshefte*, No. 3, 1893) reports seven cases of diabetes treated with salol. In four of these cases very favourable results were obtained. In one, after the use of salol in 30-grain doses three times a day, the urine remained free from sugar for nine days after a mixed diet had been resumed, the quantity of urine became normal, the urea decreased by one-third,

and the thirst and weariness disappeared. On discontinuing the salol, the sugar returned on the ninth day, but only to one-third of the previous amount, which again disappeared when the salol was resumed after eighteen days' disappearance. In two other cases salol in the same dose made the urine free from sugar; in one case, however, only for a time, and it had no effect on the excretion of the urea. In the fourth case, which, however, was on mixed diet, the action of the salol was marked, but its effect was intermittent. In three cases the drug failed to have any marked effect on the disease. Nothing, however, seems to indicate beforehand what cases of diabetes are likely to benefit by the administration of salol. In this it resembles salicylate of sodium, though it is generally thought (*vide* "Year-Book," 1892, section 13) that the drug has most influence in cases of constitutional origin, as in gouty or rheumatic subjects, and is less efficacious in the neurotic type of the disease. Nicolaiei advocates salol in cases where a strict diabetic regimen cannot be maintained. Like salicylate of sodium, salol should not be employed if the kidneys are diseased, and should be discontinued if the toxic effects of the drug—tinnitus, nausea, or albuminuria—manifest themselves.

9. Treatment of diabetes mellitus.

George Harley (*Brit. Med. Journal*, May 20, 1893) would suggest the following line of treatment: to begin by putting the organ supposed to be at fault to rights, be it liver, nervous system, or pancreas, at the same time—as the liver is the sugar manufactory of the animal body—always taking care that the biliary functions are in good working order. In the next place, endeavour to raise the general health of the patient to its highest possible standard by giving plenty of fresh air, healthy muscular exercise within the margin of fatigue, and keeping away from him all mental and bodily lowering influences. In cases of diabetes the result of excessive sugar formation, as all hepatic cases are, a restricted diet is essential; but to stop the saccharine supply wholly is not what is wanted. For were we to do so, we should arrest every function of animal life, for a certain amount of sugar is absolutely essential to their proper performance. The excessive proteid diet in some measure meets this requirement in cases of undue sugar formation, for the liver can manufacture sufficient saccharine matter out of proteids for the wants of the system, without there being much risk run of its manufacturing a superabundance.

10. Mercury in diabetes.

Morrow (*Jour. Cutan. and Gen.-Urin. Dis.*, 1893, p. 113) relates the case of a diabetic patient who had contracted syphilis

and suffered from eczema in which the administration of 2 grains of the protoiodide of mercury, cautiously given at first and then increased, effected a reduction of sugar from at least 4 per cent. to 1 per cent. During the administration no change of diet was enforced.

11. Jambul bark in diabetes.

Vix (*Therap. Monatshefte*, No. 4, 1893) points out that most of the powder used for administration is obtained from the fruit, which certainly contains the most active principle. But owing to the expense small quantities only are usually administered, so that good results are hardly obtained. He proposes therefore the use of an extract made from the bark. This he gives in quantities of 4 or 5 drachms several times a day, and has found that when the patient submitted to dietetic restrictions as well, the urine became free from sugar, and the general condition of the patient improved.

The uncertain action of jambul has been referred to in previous "Year-Books." Certainly the drug has not gained in repute, so far as the experience of English practitioners is concerned.

12. Arsenic in diabetes.

Murray (*Lancet*, Feb. 25, 1893) reports four cases treated with success by arsenic—one after the disease had subsisted several years, and had not yielded to strict diet or other remedies; another, an elderly lady—for more than a year the urine was free from sugar, though the diet was not restricted. The other cases were equally satisfactory. So that Murray believes that, when diet and opium have reduced the sugar, arsenic often is able to effect a cure. The best form of arsenic, he believes, is liquor arsenici hydrochloricus in xm doses three times a day.

13. Benzosol in diabetes.

Piat-Kowsky, of Cracow (*Lancet*, March 11, 1893), has recommended benzosol or benzoyl-guaiacol as a useful drug in diabetes mellitus. He administers it in doses of 1 to 3 grammes a day. According to Professor Jaksch, the sugar disappears from the urine after an administration of the drug for a period of eight days. At the same time it has been pointed out that the results obtained may be misleading, since the polarimetric examination of urine from persons who have taken benzosol polarises to the left; therefore the examinations of the urine when it contains sugar cannot be relied on.

14. Bread substitutes in diabetes.

R. Saundby (*Birmingham Med. Review*, May, 1893) observes that there is no greater difficulty than the provision of an

acceptable but harmless substitute for bread in a case of diabetes. Many of the so-called substitutes are neither more nor less than frauds ; besides this, they are costly, and consequently are difficult for poorer patients to obtain. Saundby has almost entirely given up the use of gluten bread, (1) because it contains at least 30 per cent. of starch ; (2) because it is unpalatable ; (3) it is very expensive. From the most favourable standpoint gluten bread is as injurious as half its weight of ordinary wheaten bread. Saundby refers to the new patent flour introduced by Professor Ebstein (*vide* "Year-Book," 1893, section 7) under the name of *Aleuronat*, but points out that, in England at least, owing to the limited demand for diabetic food, bakers will only undertake to make bread in great centres, and the carriage on it doubles the cost to those living at a distance, which renders its use impracticable in many cases. As Saundby observes, there are many cases in which it is absolutely necessary to stop the supply of starch as well as sugar, and when it is important to use a bread substitute. In these cases he recommends Clark's starchless biscuits. Saundby also gives the receipt for almond cake and of almond and cocoanut cakes, the cost of the latter being 1s. 2d. per 1½ lb. They are made by beating up six eggs in half a teacupful of milk and then stirring in ¾ lb. of finest desiccated cocoanut and ¼ lb. of ground almonds ; divide and put into sixteen flat tins and bake for twenty-five minutes in a moderate oven. If desired, they may be sweetened with glycerine or saccharine. Almond *sponge* cakes are also strongly recommended by Saundby, who also draws attention to the excellent puddings that can be made from Iceland moss (*lichen islandicus*). The suggestions made by Saundby are valuable, not only in suggesting palatable variations in the diet of the diabetic, but also by drawing attention to the much-neglected field for cuisinary improvement, and giving variety to the limited articles that form the staple of the diabetic's daily dietary routine. **Hale White** (*Practitioner*, vol. 1., p. 821) prefers the use of soya beans to gluten preparations, as containing less starch. He has given soya biscuits to patients and found they were not objected to nor any ill results followed, whilst the sugar in the urine diminished under their use.

15. Theobromin as a diuretic.

Germain Sée (*Le Progrès Méd.*, Aug., 1893, p. 87) has given the account of seven cases in which this drug has been used successfully as a diuretic. Sée prefers theobromin to diuretin, which is a mixture of that drug with salicylate of sodium (*vide* "Year-Book," 1893, section 21). Theobromin, he contends, acts directly on the kidney, and occasionally produces albuminuria,

though without toxic effects. Its action continues some twenty hours, and does not accumulate in the system. It does not disorder the stomach. As compared with caffeine, it does not excite the nervous system. The total average dose is 30 grains a day, but may be raised temporarily to 60 grains; as it is insoluble it should be given in powder.

16. Cantharides in urinary incontinence.

H. A. Hare (*Therap. Gazette*, Nov. 8, 1893, p. 529) has found cantharides useful in the treatment of incontinence of urine dependent on want of control of the vesical sphincter. He advises a drop of cantharides every eight hours; but it must not be administered when either the stomach, bladder, or kidneys are in a condition of inflammation.

17. Renal calculus, piperazine in.

David Stewart (*Therap. Gazette*, vol. xvii., p. 19) contributes an important paper on the action of piperazine in cases of *lithiasis*. He admits our present knowledge of the action of this drug is so limited that little more than theorising can be employed. That it is beneficial in cases of gravel and stone he thinks certain. Contradictory statements, however, exist as to how this beneficial action is caused, and more extended examinations as to the effect of piperazine on nitrogenous excretion, both in healthy and uratic subjects, must be made before an accurate judgment can be arrived at. Seeing that a 1 per cent. solution in a test-tube has a direct solvent action on uratic calculi, its action on a stone in the renal pelvis of the kidney can be appreciated; since piperazine is a stable compound, and apparently does not undergo decomposition in the organism, as it is readily excreted by the kidneys, and can be detected in the urine shortly after the administration by the mouth. In face, however, of its affinity for uric acid, its administration appears to be of little use for uratic deposits in the joints, either as regards their removal or prevention of recurrent attacks. Rörig (*Therap. Monatshefte*, No. 8, 1893) reports two cases in whom albuminuria was apparently induced by piperazine, as detected by the picric acid test. [The caution is needed, considering the indiscriminate use of piperazine by patients suffering from lithiasis, often without reference to their medical attendant. Still, I have never met with a case in which the drug, even in fairly large doses, has caused the slightest trace of albumen; yet it may be necessary not to permit the abuse of it in cases where disease of the kidneys is present. Given in the gouty kidney, however, in moderate doses, it acts beneficially by clearing the tubules of uratic deposits.]

18. Kolpocystotomy in chronic cystitis in the female.

Croom (*Practitioner*, Feb. 1, 1893), after pointing out that the persistent use of opiates is not only needless but harmful, insists that the treatment should be local, embracing (1) antiseptic treatment; (2) continued rest of the hypertrophied muscular coat. This second essential is often lost sight of, and can be carried out in three ways: (1) Dilatation of the urethra by bougies. This, however, is objectionable in tuberculous cases, as it is apt to produce persistent incontinence. (2) Permanent draining with a Skene-Goodman catheter. (3) Kolpocystotomy, which the author has tried in four cases in which other treatment failed. In three cases the results were satisfactory; but in the fourth case, which did not succeed, he attributes the result to the fact that the bladder was allowed to drain for too long a time through the artificial vesico-vaginal fistula.

19. Cystitis exfoliativa.

Southam (*Med. Chronicle*, Jan., 1893, p. 230) relates the particulars of two interesting cases of this complaint. One, a female, who, after the expulsion of a complete cast of the bladder, recovered, regaining complete control over the action of that organ, and the urine becoming normal. The other, a male aged twenty, suffering from dislocation of the spine (seventh cerv. vert.). After death the cavity of the bladder was found lined with a white, loose, yellowish membrane $\frac{1}{6}$ to $\frac{1}{4}$ inch in thickness. It appeared to consist of the mucous membrane and submucous tissue, and was coated with phosphates. On removing it the subjacent muscular coat was exposed to view.

20. Ammoniacal cystitis treated by inducing lactic acid fermentation in the bladder.

Sir William Roberts (*Lancet*, Feb. 25, 1893) records an interesting case of a patient (glycosuric) in whose bladder three fermentations were continuously in progress. One of these was lactic acid, which gave a high degree of acidity to the urine; the second alcoholic, engendered by yeast cells, no doubt accidentally introduced into the bladder by the catheter. The third was acetous fermentation, for acetic acid was distinctly obtained from the distillate from the urine. Sir William Roberts, from a consideration of this case, suggests that lactic acid fermentation might be turned to therapeutic use in the treatment of bladder affections accompanied with ammoniacal decomposition. If, he thinks, we could start and maintain in the bladder an acid fermentation of the lactic type, the irritating quality of the urine would be neutralised, its acidity restored, and the deposition of phosphates

prevented. To effect this, Sir William Roberts proposes, as a preliminary step, to irrigate the bladder with a solution of dilute citric acid (10 grains to Oj), in order to abate the ammoniacal reaction in which the lactic fermentation cannot take place. After the alkaline reaction had been reduced by the injection of 3 pints of the above, a 10 to 20 per cent. solution of *bynin*, which naturally is impregnated with the germs of lactic acid fermentation, might be injected into the emptied bladder twice or thrice a day, and retained as long as possible. A course of treatment continued for a week or two would probably give the lactic acid fermentation the upper hand—for a time at least. The advantage, as Sir William Roberts points out, in thus substituting lactic acid fermentation for ammoniacal is that, as far as is known, the poisonous animal alkaloids (ptomaines) and albumoses are all products of fermentation of azotised substances; whereas the products of fermentation of carbohydrate substances are innocuous.

21. Miscellaneous abstracts.

Short references to contributions not treating directly on therapeutics, but having a collateral bearing.

(1) *Diabetes mellitus with low specific gravity.*

Sir Edward Sieveking (*Brit. Med. Journal*, September 17, 1892) reports a case of diabetes mellitus in which the specific gravity was as low as 1010, and, according to Luff's analysis, contained a small quantity of sugar and a trace of albumen. The patient had suffered for six years from diabetes, but considering herself cured had returned to her ordinary way of living, and consulted Sir Edward Sieveking for severe symptoms of stomach derangement. Under treatment the specific gravity rose to 1014, the urine still showing the presence of sugar and albumen. After this the case was lost sight of. MacIlwaine (*Brit. Med. Journal*, Oct. 1, 1893) gives an account of another patient suffering from ulcer under the ball of the great toe. This led to an examination of the urine, which gave indisputable evidence of sugar; the specific gravity was 1010, but no albumen. Boulting (*ibid.*) mentions a case in which the patient, a man fifty-six years of age, passes about 50 oz. of urine *per diem*, of a specific gravity ranging from 1020 to 1022, containing about 1 grain of sugar per ounce, on strict diabetic diet. He has constant pains in both legs, sometimes of lightning character, loss of knee-jerk, and a gait suggestive of commencing locomotor ataxy.

A. Anderson (*Brit. Med. Journal*, Dec. 24, 1892) also records an interesting case of diabetes which, when it first came under observation—1887—was passing six to seven pints of urine daily

with a specific gravity of 1035. Since then he continued to lose flesh and strength till he again came under observation last year on account of broncho-pneumonic complications, when he was found to be passing about six pints of urine daily of a specific gravity of 1008—1012, always containing sugar. The urine also contained a trace of albumen, but no renal tube casts. The patient also complained of certain nervous symptoms, such as severe pains in the legs and shaking fits, after which he would be in a state of stupor or forgetfulness. Anderson, who saw him after one of these attacks, found the temperature to be 103° F., but the next morning it was 98° F. A sample of urine passed during the night was sent to Luff, who examined it and reported that its specific gravity was 1006, and that it contained a small quantity of sugar and a trace of albumen—an observation which accorded with that of Anderson. After this the patient kept his bed, the urine becoming reduced to two pints, and of somewhat higher specific gravity, whilst the sugar was determined by the fermentation test. The attacks of trembling and stupor continued, though in slighter degree. The cough became troublesome, and the weakness increased till incontinence of urine set in, and he died, quite conscious, however, to the last.

The point of interest about these cases is to remind us that a low specific gravity of the urine is not incompatible with the presence of a moderate degree of sugar in the urine. This may be brought about in many ways. Thus, in protracted diabetes, towards the close the amount of sugar in the urine frequently becomes reduced whilst the diuresis continues. Again, in febrile conditions, especially in pneumonia when affecting diabetics, the amount of sugar is usually considerably reduced, with a corresponding fall in the previously high specific gravity. Also, in cases of glycosuria developing during the course of renal cirrhosis, the specific gravity is often low, though there may be a fair amount of sugar present. In these cases, however, the amount of urea excreted is considerably lowered, which fairly accounts for the diminished solids. Lastly, in certain cases with marked neurotic conditions, the specific gravity often falls below 1020; in some of these cases the phenomenon known as "pneumaturia" may be observed. The lesson to be learnt from such instances is never to omit testing for sugar on account of diminished specific gravity, and to regard the presence of sugar in such a case as of bad prodromal augury.

(2) *Diabetic gangrene.*

Godlee (*Lancet*, Oct. 29, 1893), in a paper read before the Royal Medical and Chirurgical Society, pointed out that the so-

called diabetic gangrene is in most cases dependent either on arterial disease or peripheral neuritis. In the former the pain is great and progress rapid; in the latter the pain is insignificant and the progress slow. The former should be treated by amputation above the knee, since in these cases the degeneration almost always reached the knee. In the latter class of cases the disease might either be left alone or treated by amputation close to the necrosed part. It was also pointed out that no amount of antiseptic treatment would prevent diabetic coma, which might follow on the most trivial operation.

(3) *Knee-jerks and peripheral neuritis in diabetes.*

Williamson (*Med. Chronicle*, Nov., 1893, p. 81) sums up the chief symptoms in diabetic neuritis, as pain in the legs, cramps, numbness, tingling tenderness, and absence of knee-jerks, as not unfrequent. Cases of diabetes presenting marked paresis or paralysis appear to be comparatively rare. The onset of symptoms is gradual or subacute. Williamson agrees with previous writers that the neuritis does not bear any relation to the amount of sugar in the urine, and that the symptoms continue if by strict diet the sugar disappears from the urine. He quotes the views of **Auche**, who considers the changes in the nerves due to poverty of the tissue in water, the general disturbance of nutrition, acetone, or some other unknown substance in the blood. **Gowers** also believes that the neuritis is due to some toxic substance in the blood; that the poison is not a product of a decomposition of sugar, but a material formed in place of sugar by some modification of the chemical processes that lead to increased sugar production.

(4) *Diabetic xanthoma.*

Morris (*Brit. Journal of Dermatology*, Aug., 1892) adds another case to a list of twelve collected since 1851, which are briefly summarised. **Radcliffe Crocker**, in the same journal, distinguishes pathologically between xanthoma diabeticorum, xanthoma planum, and xanthoma tuberosum, and arrives at the conclusion that the process is an inflammatory one, and that in the three forms there is a chain of development of which the diabetic variety is the least advanced and the xanthoma planum the most.

(5) *Diabetes and pancreatic calculi.*

Freyhaus (*Berl. klin. Wochens.*, No. 6, 1893) relates two cases of diabetes in which pancreatic calculi were found impacted in the pancreas, leading to complete destruction of the gland tissue. The experimental observations of **Minkowski** (to which we have referred—section 6) have shown that mere obstruction

of the pancreatic duct does not cause diabetes, and that it is reasonable to infer that diabetes only follows when complete destruction of the gland is found.

(6) *Acute diabetes.*

Glaeser (*Zeitsch. für klin. Medicin*, vol. xxi., 1893) reports an unusually rapid case of diabetes mellitus which, from its onset to fatal termination by coma, lasted only twelve or at the most thirteen days. The urine had a specific gravity of 1033 and 3 per cent. of sugar. The right lung at the apex gave a dull note, and there were evidences of catarrhal pneumonia. Over the left ventricle and aorta the second sound was lost; the pulse was frequent.

(7) *On prodromal and concomitant symptoms in diabetic coma.*

Kust (*Oest.-Ungar. Centralb. f. d. Med. Wissenschaften*, Jan. 1, 1893) has confirmed the observation made by Sandemeyer, that numerous casts, with only a small amount of albumen present, is an important prognostic sign of impending coma. Should the coma pass off, then the casts disappear.

(8) *Acidity of urine in diabetes.*

The **Editor Archiv. Gén. de Méd.** (Feb., 1893) states that the acidity of urine in diabetes mellitus increases with the onset of symptoms denoting diabetic coma, or with the presence of acetone in urine. The acidity increases in proportion to that of sugar, phosphoric acid, and of urea. The increase of acidity of the urine in a case of diabetes mellitus is therefore of prodromal importance, and the importance of treating the initial state of acetonæmia was insisted on (*vide* "Year-Book," 1893, section 11). The necessity, therefore, of noting the reaction of the urine, together with the sudden appearance of casts, will often afford an opportunity of successfully warding off diabetic coma.

(9) *Albuminuria: its importance as regards operations.*

E. Kummer (*Revue Méd. de la Suisse Romande*, Dec., 1892) states that whilst the careful use of anæsthetics is not to be feared in patients suffering from nephritis, antiseptics must always be used with caution, and asepsis, if possible, resorted to. Kummer besides points out that there is a certain class of patients in whom albuminuria may be removed by operation, as in a case of his own of suppurating ovarian cyst, in which, after removal, a previous albuminuria disappeared. He concludes by thinking that in certain abdominal tumours the presence of albumen is rather an indication than not for operating, and attributes the disappearance of the albuminuria that frequently occurs in these cases as due to one of three factors: (1) Relief of pressure on the ureters; (2) relief of pressure on the renal vessels;

(3) the prevention of entrance of toxic substances from the suppurating organ by its removal.

(10) *Epidemic Bright's disease.*

C. Fiessinger (*Rev. de Méd.*, May, 1893) relates the course of an apparent epidemic of Bright's disease, arising independently of scarlet fever, occurring 1891 in the town of Oponnax. It commenced in the month of September, the weather being wet and cold. The town had been free from scarlet fever for some months. Endemic influenza and pneumonia were prevalent, and six cases of erysipelas and four of septicæmia reported. The first two cases were those of primiparæ, who both developed nephritis, but recovered after parturition; there had been no communication between the two. Then came eight other cases, spread over the months of November, December, January, and February. The patients were generally cured within a short period; one drifted into chronic albuminuria, and only one, a child, died. The clinical records did not differ from those of ordinary Bright's disease. Micro-organisms were demonstrated in two cases, once in the urine and once in the sputum. From these observations Fiessinger concludes that certain cases of nephritis may develop like an infectious disease, such as epidemic influenza and pneumonia, and are due to micro-organisms of low virulence, which develop perhaps in the mouth, and are capable of transmission.

(11) *Diagnosis and treatment of hydronephrosis.*

Wright (*Med. Chronicle*, vol. xvii., 1892-93, p. 145) is of opinion that attention should be carefully directed towards the discovery of causes likely to produce such a condition, and enumerates several. If no such cause be determined, the kidney should be drained; and if, after a fair trial, the kidney does not heal or shrink, and inconvenience results, nephrectomy may be performed.

(12) *Cases of nephrotomy for conditions simulating renal calculus.*

Southam (*Med. Chronicle*, vol. xvii., 1892-93, p. 158) relates two cases in which an operation was performed for the removal of a supposed renal concretion, when none was found. In the one case the kidney was cirrhotic; in the other no organic lesion was found, but the patient had received an injury to the loin some time before, which might account for the nephralgia.

These cases are interesting, but not infrequent. In a case I was interested in, a child, the subject of repeated attacks of renal colic, nephrotomy being performed, nothing was found but a thickened and somewhat dilated pelvis of the kidney. Since the operation the attacks of colic have ceased—now four years.

(13) *Hæmatoporphyrin as a urinary pigment.*

Garrod (*Journ. of Path. and Bact.*, vol. i., p. 187) has shown that even healthy urine contains traces of hæmatoporphyrin, whilst it is formed in considerable excess in acute rheumatism, gout, tuberculosis, chorea, pneumonia, and primary and secondary anæmia. He obtains it by precipitating the earthy phosphates with potassium or sodium hydrate, which carries it down with them; collecting the precipitate, washing with distilled water, and then treating with alcohol and dilute sulphuric acid, from which a nearly pure solution of the pigment is obtained.

(14) *Iodine test for bile pigment.*

H. Rosin (*Berl. klin. Woch.*, p. 106, 1893) recommends a modification of the iodine test. This is by using a very dilute solution of tincture of iodine. This shows a delicate grass-green ring when about two drops of the diluted iodine is floated on the urine, containing only traces of bile.

(15) *Gas-forming bacillus in urine.*

Schon (*Centralblatt für Bacteriologie*, Dec. 3, 1892) describes an organism found in the urine of a patient suffering from cystitis. This organism grew in the usual media, in some, with the development of gas. In sterilised urine it produced cloudiness, slight alkalinity, gas bubbles, and a slight aromatic odour. The gas proved to be CO_2 . This organism Schon considers a coccobacillus; it stains with the ordinary aniline dyes.

GOUT AND RHEUMATISM.

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1. Gout.

The additions to the literature of the pathology and treatment of gout published during the past year have been fewer than usual. In *Schmidt's Jahrbücher* (vol. 236, p. 76), Laquer, of Wiesbaden, gives a summary of some of the most modern researches upon the subject: but he almost confines his attention to the respective results and views of Ebstein and Emil Pfeiffer. An interesting clinical lecture by Nothnagel published in the *Gazzetta degli Ospitali* (1892, xiii., p. 737) gives a *résumé* of the etiology and clinical aspects of gout, and serves to emphasise the rarity of this disease in Vienna; for Nothnagel states that, since he came to that city, he had not had any previous opportunity of demonstrating a case to his class.

2. Gout in a child.

Mabboux, of Contrexéville (*Lyon Médical*, lxxi., 1892, p. 264), records a case of extreme interest, viz., that of a girl aged eleven, who suffered from what appears to have been undoubtedly an attack of acute articular gout.

The patient, who had never menstruated, usually had good health, and had not suffered from migraine, dyspepsia, or cutaneous eruptions. Her father had had a first attack of gout eighteen months previously, and it was on account of his health that the family visited Contrexéville. No other case was known to have occurred in the family.

The child complained one day of general malaise, and of difficulty of swallowing, which symptoms had abated by the following day; but in the afternoon she had pain on the plantar aspect of the right great toe, which spread to the back of the toe joint, and was accompanied by redness and distension of the veins of the part. The appearance of the joint suggested a gouty inflammation. There was no febrile disturbance, no visible throat affection, and no pain except in the throat.

During the following night the pain was intense, but it suddenly abated at about 4 a.m. On the third day there was still some swelling and tenderness, and the left great toe was

attacked. The urine was loaded with urates and uric-acid sand. Up to this time only external treatment had been employed.

On the fourth day the condition of the left foot was typical. Three grammes of sodium salicylate were given, and on the following day the pain had disappeared, although there was still some redness of the left great toe.

Some other examples of gouty attacks in children have been recorded, and these are referred to by Mabboux. It is interesting to note that in the present instance, although, as is practically always the case when the disease occurs at an abnormally early age, the child's father was gouty, he had never shown any manifestations of the disease until some nine or ten years after the birth of the patient.

3. Gout of the intestines.

Haig maintains (*Practitioner*, 1893, vol. 1., p. 17) that gouty affections of the intestines are very far from being so rare as has been supposed, and that many cases of colic, enteralgia, and enteritis, as well as attacks clinically indistinguishable from typhlitis, are really of this nature.

He points out that certain metals—*e.g.*, mercury, lead, zinc, all of which "drive uric acid out of the blood into the tissues," by forming with it insoluble compounds—cause colic or enteritis; and he has found in his own person that calomel produces severe intestinal pain when taken for the intestinal disturbance which usually accompanies his uric-acid headache. This pain is with him always cured by sodium salicylate; and he has found this drug to yield excellent results in cases of lead colic and typhlitis. Cocaine, which also diminishes the excretion of uric acid, produced the same effect upon him.

Haig ascribes the locality of the pain to the increased acidity of the intestinal contents as the colon is approached, and states that nature eventually cures such cases by virtue of rising alkalinity, which in cases of lead colic dissolves out from the tissues the irritating lead urate.

He strongly advocates the administration of sodium salicylate in doses of gr. xv, every three or four hours for an adult, the interval being increased to six hours when a drachm or a drachm and a half has been taken. Opium is rarely needed, as the salicylate relieves the pain so quickly. Alkaline salts of sodium or potassium should not be given with the salicylate, which should be continued for five or six days after the pain has ceased. The diet should follow the rules ordinarily laid down for typhlitis cases, and ordinary diet should be returned to while the salicylate is still being taken.

4. Gouty neuritis.

Hutchinson (*Archives of Surgery*, vol. iv., 1892, p. 69) records a case of gouty peripheral neuritis affecting the anterior crural nerve, and manifesting itself by intense pain in the front of the thigh and above the knee, and following the distribution of all the branches of the anterior crural nerve, with the exception of the terminal filaments of the long saphena. The skin was extremely sensitive when the pain (which was paroxysmal, and described as "sawing, chiselling, or boring") was severe. The patient, who was a man aged sixty-one years, had an attack of acute gout in the left foot, while he was laid up on account of this pain.

5. Diet of gouty patients.

In the *Birmingham Medical Review* (1892, vol. xxxii. p. 275) T. Sydney Short discusses the diet of the gouty. Seeing that all the main classes of food-stuffs appear to produce in certain individuals a tendency to uric-acid increase, he points out that in this disease our endeavour should be so to choose the articles of diet that each should contain a little of some one of the groups, without sufficient of any other to increase that other disproportionately. For example, a vegetarian diet, although it diminishes the nitrogenous intake, will probably do more harm than good by unduly increasing the carbohydrate intake. He lays down a dietary to serve as a guide, but in conclusion forces home the important lesson that each case must be considered upon its particular merits—in other words, that we shall err if, instead of prescribing a dietary for the individual gouty patient, we treat all such upon a routine plan.

6. Piperazine.

Martin Mendelsohn (*Berl. klin. Woch.*, 1892, p. 384) denies *in toto* the utility of piperazine as a solvent of uric-acid calculi in the body, or as a preventive of the further deposition of the acid. This denial he bases on the fact that although a uric-acid calculus is fairly readily dissolved in a pure solution of piperazine, the same solvent power is not possessed by urine to which the drug has been added, or the urine of a patient taking piperazine. He shows, moreover, that in the most favourable circumstances the process of solution is not a rapid one. To this Biesenthal replies (same journal, 1892, p. 754) that practically piperazine is proved to be a remedy of extreme value both in chronic and acute gout, as well as in cases of renal colic, and of hæmaturia not due to calculus. He maintains that in considering the action of the drug we have to deal, not with the solution of uric acid in urine, but with its solvent action upon, and combination with, the free acid in the joints and tissues, with that circulating in the liquids

of the body or deposited in certain parts, and with its power to hinder the separation out of the acid.

7. Rheumatism.

Kahler (*Wiener Med. Presse*, vol. xxxiii., 1892, No. 30 and following numbers) speaks of the infective nature of rheumatism as practically established, and connects it with the miasmatic diseases. The febrile disturbance he regards as primary, and as not materially influenced by the local inflammatory changes, even pericarditis producing in some instances no marked effect upon it. (See "Year-Book," 1892, p. 189.)

After stating that this is one of the most difficult of clinical problems, he discusses the question whether endocarditis can be recognised before it produces definite valvular lesions. Kahler regards the enlargement of the cardiac area, the development of murmurs, and reduplication of sounds as unsafe guides, since they are met with in other fevers which do not give rise to endocarditis as results of weakening of the heart muscle. Moreover, the murmurs developed in the course of acute rheumatism often disappear entirely. [Are we bound to assume that endocarditis must permanently damage the valves, and may not the swelling of the curtains cause merely a temporary incompetence?—A. E. G.]

Kahler held that the diagnosis of endocarditis can only be made with certainty by watching the changes in the sounds, especially at the apex, and the gradual change through a mere prolongation of the first sound to a definite murmur.

He points out that there may be no murmur in the acute attack, and yet valvular lesions may develop later, and argues from this that the endocarditis may progress long after the fever and joint lesions have disappeared [just as is certainly the case with the analogous subcutaneous nodule formation.—A. E. G.]

Passing on, he confirms the statement that the sweat of patients with acute rheumatism is no more acid than that of patients suffering from other diseases.

Kahler speaks highly of the salicylic treatment. He mentions among the ill effects which may result from these drugs a species of air hunger resembling that of diabetic coma, which is an indication for stopping the drug, and disappears when it is stopped.

He considers that salicylic acid is less liable to produce ill effects than the soda salt, and therefore he prefers it in spite of its liability to upset the stomach.

8. Statistics of rheumatic fever.

In the *Deutsches Archiv* (1893, vol. li., p. 50) Stoll gives the results of a statistical examination of the cases of acute rheumatism

admitted to the Cantonal Hospital at Zürich during the years 1881-90 inclusive, and compares them with other statistics of the same kind, including those of Lebert based on observations also made in Zürich, and published in the year 1860.

As to the relation of the prevalence of rheumatic fever to rainfall, the tables do not afford any certain reply. The majority of the cases occurred in the months of April, May, March, and February, in the above order, the spring therefore showing an excess over the other seasons. These results are in accord with those of Lebert.

The greatest liability to the disease appeared to be in the third decade of life, and especially from twenty to twenty-five; but, as Stoll points out, the apparent immunity of childhood may be due to the fact that the young patients mostly go to the Children's Hospital.

Among the 491 patients 331 were males and 160 females, and the majority were maidservants and soldiers.

Causation was noted in 459 cases; chill was the cause assigned in 71 cases, overstrain in 16, and contusions in 4; besides the cases simply ascribed to chill were others in which sleeping in damp beds and similar causes were given.

The influence of locality is discussed in connection with Edlefsen's views. In 26 cases, or 5·3 per cent., a family history of acute rheumatism was forthcoming.

Of 459 patients, 247 were suffering from first attacks, and 131 from second attacks.

The large joints, and especially those of the lower extremity, usually suffered first. In 27·8 per cent. of the cases the ankles were involved; in 17·9 per cent. the knees; then follow the wrists, shoulders, hips, tarsal joints, elbows, carpal joints, toes and fingers, in the above order.

Endocarditis alone was diagnosed in 29 cases, a single valve being affected in 6; in 10 cases pericarditis and endocarditis were associated, and in 8 the pericardium was alone attacked. Fifteen patients had functional murmurs. The heart was usually attacked at the end of the first or at the beginning of the second week of the fever. Patients between the ages of fifteen and twenty-five showed the greatest liability to such troubles. Permanent valvular lesions resulted in 15 cases, mitral regurgitation in 15, stenosis in 2, double mitral lesion in 4, aortic and mitral regurgitation in 1.

Pleurisy occurred in 16 cases (left-sided in 7, right-sided in 4, double in 5). Pneumonia occurred in 5 cases, in 2 in connection with pleurisy, and bronchitis was met with in 33 cases.

Sore-throat was observed in 23 instances only, epistaxis in 12, retention of urine in 2, nodules in only a single case, and teno-synovitis at the wrist in one case.

Among skin affections, bed-sores occurred in 2 cases, urticaria in 2, peliosis rheumatica in 4, and miliaria rubra in 6 cases.

Albuminuria was observed in 25 instances (5.5 per cent.), acute nephritis in 4, chorea in 3 cases only, and melancholia in 1 case.

The spleen was enlarged in 10 cases, in 1 perhaps from embolism, and in 1 from antecedent malarial fever.

Enlarged liver was diagnosed by percussion in 4 instances, and jaundice occurred once.

Special cases are quoted at length illustrating the occurrence of acute nephritis, spinal meningitis, and purpura.

Nearly all the cases were treated with salicylic acid or sodium salicylate. Antipyrin was sometimes effectual when salicylate failed.

Three hundred and thirty-five patients, or about two-thirds, were discharged within thirty days of admission. There was no fatal case.

9. Effects of pregnancy and the puerperal state on the course of acute rheumatism.

C. von Noorden has contributed to the *Charité Annalen* (vol. xvii., 1892, p. 185) a most interesting and important paper on this subject, in which he arrives at the conclusion that "pregnancy and the puerperium impress a peculiar stamp upon acute rheumatism, and render recovery more difficult." He gives notes of ten cases treated in the hospital during the past ten years in which rheumatic fever occurred in pregnant women, and is very careful to distinguish these cases from acute joint affections of pyæmic or gonorrhœal origin.

He found that only some of the joints recovered rapidly under the ordinary treatment, whilst in some large joints such as the knee, or in a collection of small joints such as those of the hands, the affection persisted; so that it became necessary to resort to such methods of treatment as wrapping up and fixing the joints. Weeks or months passed without material improvement, and passive movements caused rapid increase of the symptoms. Recrudescence of the symptoms in other than the affected joints was also not uncommon. The joints were nearly always left stiff on the subsidence of the acute condition, and, in some instances, actual ankylosis resulted.

The condition of the joints was practically unchanged after delivery. Von Noorden placed against these some control

observations from the same wards, of women who were not pregnant, and found that whereas events followed the above course in no less than nine out of eleven cases in pregnant women, among ninety other cases permanent affection of the joints was only observed in seven, one of which was probably an example of gonorrhœal arthritis.

Nor could the results be ascribed to any peculiarity of treatment, since antipyrin and other drugs which had proved of service in ordinary cases were employed. Only sodium salicylate was used with great caution, on the ground that a drug which is known to cause renal irritation when administered in large doses, should be used very carefully during pregnancy, when there is a special liability to renal trouble.

10. Subcutaneous rheumatic nodules.

Edge (*Brit. Med. Journal*, 1893, i. p. 116) records a case of subcutaneous nodules without cardiac lesions. The patient was a boy aged eight, who complained of pain in several joints and had swelling of both wrists. There were many nodules in the various positions in which these excrescences are usually found, including the head, scapulæ, and crests of the ilia. There was a suspicion of a systolic murmur at the apex on the day on which he was first seen, but not afterwards. The nodules came and went, and finally disappeared in about six months. The boy's temperature was barely raised.

The occurrence of rheumatic nodules without cardiac lesions is not quite so rare an event as has sometimes been supposed, although the association is present in the great majority of cases. I have had quite recently under my care two cases of children who had undoubtedly rheumatic nodules, without any sign of valvular disease, and in one of these cases a slight and transitory pain in the shoulder-joint without any swelling was the only other manifestation of rheumatism. Some years ago I saw a case under the care of the late Dr. Hadden, which was afterwards recorded by him, in which the nodules were typical, although very careful inquiry failed to elicit any other rheumatic symptoms; but I believe that the boy developed a mitral murmur at a later period. (*See Clin. Soc. Trans.*, vol. xxiii. p. 277.)

11. Tonsillitis and rheumatism.

J. C. Crossland (*Journal of the American Med. Assoc.*, vol. xix., 1892, p. 519) records a case in which a male patient had suffered from four attacks of acute tonsillitis, each followed by acute rheumatism, from which he had never suffered without antecedent throat affection. The tonsillitis was on two occasions suppurative.

There was much inflammation of the tonsils and tissues around, and the affection shifted rapidly from one tonsil to the other.

12. Dislocation of the hip in rheumatic fever.

Nichol, of Margate (*Lancet*, 1893, i. p. 524), describes an example of a rare accident of rheumatic fever. The patient, a little girl aged seven, came under observation after an attack of chorea, and the mother stated that about a fortnight previously she had noticed a deformity of the hip. The illness was said to have commenced with swelling, pain, and heat of the left ankle and knee-joints. The child was emaciated and very anæmic, and presented the classical signs of dislocation of the femur on to the dorsum ilii. Even gentle manipulation caused great pain. There was a loud mitral systolic murmur.

Reduction was easily effected under an anæsthetic, and recovery was practically complete, only a slight stiffness of the joint remaining.

Nichol quotes similar cases recorded by Stanley (*Medico-Chirurgical Trans.*, 1841, p. 132), Brown (*Boston Med. and Surg. Journal*, Sept. 29, 1870), and Verneuil (*Lancet*, 1883, ii. p. 919).

13. Peliosis rheumatica.

This is an unfortunate term, for it is applied to more than one form of purpuric eruption occurring in the course of rheumatic fever, and Schönlein, who first used it, expressly stated that the spots which he described disappeared on pressure. It seems, therefore, very desirable that it should be abandoned in favour of such terms as "purpuric erythema," "rheumatic purpura," etc.

Barham (*New York Medical Journal*, 1893, lvii. p. 275) holds to the view that this condition is probably a variety of erythema exudativum rather than a true purpuric affection, and his case certainly appears to have been of that nature. (Some of the older recorded cases were certainly examples of erythema nodosum.)

In contrast with Barham's case, one recorded by Hermann Hertzka (*Archiv f. Kinderheilkunde*, 1892, xiv. p. 199), under the same designation, may be quoted. The patient was a boy aged eleven, who was in good health up to the onset of the attack, which was sudden, and attended with vomiting, high fever, and severe cerebral disturbance. There was a purpuric eruption which developed as a single outbreak, and it did not recur. Later, the child developed symptoms of acute articular rheumatism. The hæmorrhage appeared both in the skin and mucous membranes, and in places the spots were confluent. The heart was unaffected throughout. Some peeling occurred during convalescence. Recovery was complete.

14. Rheumatic peripheral neuritis.

In the course of a discussion on peripheral neuritis in the Medical Section of the British Medical Association, at the Nottingham meeting (*Brit. Med. Journal*, 1892, ii. p. 1097), several references were made to the occurrence of peripheral neuritis in association with rheumatism.

Handford related the case of a young widow, aged nineteen, who presented on her admission to hospital all the appearances of subacute rheumatism. The temperature quickly fell, and the pain was relieved by salicylic treatment. Many joints were affected, and the arms and fore-arms were swollen and œdematous. There was a mitral systolic murmur.

Three days after her admission, when the joint pains had subsided, the patient complained of numbness of the right middle, ring, and little fingers, and of the entire left hand. Analgesia and anæsthesia were present all over the left hand, and extended three inches above the wrist, rather farther on the radial than on the ulnar aspect. There was no perceptible thickening of the ulnar nerves, and the anæsthesia did not follow any nerve trunk. The knee and triceps jerk were present, but neither supinator jerk was obtained. The skin of both fore-arms desquamated.

The affected muscles were tender when grasped, and later wasted, and exhibited to a slight degree the reaction of degeneration. The nails were normal, and the skin was not glossy. Four months later the condition had much improved. There was slight subacute nephritis with much albumen and a few granular casts, but the albumen disappeared during convalescence.

Hadley Neale (*Ibid.*, p. 1100) showed a case of peripheral neuritis, dating from an attack of acute rheumatism twenty months previously. There was first sensory disturbance, and later wasting, commencing in the muscles of the arms, and becoming general. The patient improved greatly under treatment in hospital.

15. Treatment of rheumatism by baths.

Myrtle (*Med. Press and Circular*, 1893, i. p. 251) treats of the three articular diseases, gout, rheumatoid arthritis, and rheumatism, and refers to the value of the Harrogate course in the treatment of the two former, and in removing the effects of the last-named disease.

Bosanyi (*Wiener Med. Wochenschrift*, 1893, xliii. p. 288) discusses the value of the sulphurous St. Luka's Baths at Ofen (Buda) in the removal of the residual pains of acute rheumatism, and speaks highly of their efficacy in this respect.

16. New anti-rheumatic drugs.

The *Therap. Monatshefte* for June, 1893 (p. 273), contains a *resumé* of the work on new anti-rheumatic drugs during 1892.

Agathin has been tried by **Rosenbaum** (*Deutsche Med. Zeitung*, 1892, No. 50) without any conspicuous success; *antinervin* by **Laurenti** (*Deutsche Med. Zeitung*, 1892, No. 35) and **Drobner** (*Wiener Med. Blatt*, 1892, Nos. 25 and 26).

Salipyrin is highly spoken of as a drug in acute gout and rheumatism by **Argo** (*Therap. Monatshefte*, 1892, p. 234) who has obtained excellent results with it.

Salophen is a compound of salicylic acid with acetyl-paramidophenol, which is split up by the pancreatic juice as the analogous salol is, and contains 50·9 per cent. of salicylic acid. This drug is tasteless, and almost insoluble in cold water. It was first employed by **Guttmann**, and was found to have distinct anti-rheumatic properties. **Fröhlich** (*Wiener Med. Wochenschrift*, 1892, pp. 1004 and 1119) found that the drug was prompt in its working in rheumatic fever, and that its effects resembled those of the salicylates and salol, but it has the advantages of being tasteless, and of not causing digestive disturbance, singing in the ears, or vomiting.

Hitschmann (*Wiener Klin. Wochenschrift*, 1892, p. 702) gave about 6 grammes of salophen in the day in hourly or two-hourly doses of $\frac{1}{2}$ to 1 gramme. He found that it acted like other salicylic drugs, not preventing relapses or cardiac troubles. Slowing of the pulse was noticed in a considerable proportion of cases.

Profuse sweating was sometimes observed with a formation of crystals of unaltered salophen upon the skin.

Euphorin, or *phenyl urethane*, was tried by **H. Köster** (*Therap. Monatshefte*, 1892, p. 397) in 14 cases of acute articular and in 7 of muscular rheumatism. His report is not favourable, its efficacy being decidedly less than that of the salicylates.

Asaprol, a soluble derivative of β -naphthol, has been given by **Stackler** (*Bull. Gén. de Thérap.*, 1892, cxxii. p. 415) in the different rheumatic affections, and rapidly cured acute articular rheumatism. The dose employed was 1 to 4 grammes.

17. Rheumatoid arthritis.

Variot (*Bull. et Mem. Soc. Méd. des Hôpitaux*, 1892-3, s. iii., vol. ix. p. 527) records a remarkable case of chronic articular affection in a male aged twenty, which in many respects resembles the cases described by **Jaccoud** under the name of "rheumatisme fibreux" rather than true rheumatoid arthritis. The patient had an attack of acute rheumatism at the age of ten, followed by

relapses during the next eighteen months. At fourteen he had a fresh attack, and from that time had never been free from joint affection. The joints became ankylosed and deformed, and there was much muscular atrophy. There was almost complete ankylosis of many joints and dislocation of the left hip. The temporo-maxillary joints were much affected. Tubercular disease of the lungs developed, and there was a cavity at the right apex.

18. Diagnosis and treatment of rheumatoid arthritis.

In a post-graduate lecture, Sir Alfred Garrod (*Lancet*, 1892, ii. p. 1033) called attention to the great practical importance of clearly distinguishing rheumatoid arthritis from gout. He commenced by pointing out the chief pathological and clinical differences between the two maladies, their different causation and incidence upon the sexes; the presence of uratic deposits in gout, their absence in rheumatoid arthritis; the tendency of gouty patients to eczema, albuminuria, and digestive disorders, as contrasted with the apparent limitation of the lesions of rheumatoid arthritis to the joints; as well as to the different distribution of the joint lesions. It was then pointed out that "to mistake true-gout for rheumatoid arthritis is perhaps of comparatively little importance. It might, and probably would, by the treatment adopted, lead to a prolongation of the attack and inconvenience to the patient; but to mistake rheumatoid arthritis for true gout is often the cause of irreparable mischief, and may lead to the worst form of crippling." The rheumatoid patients often have their diet limited; their meat is cut off, and colchicum, salines and iodide of potassium are administered, with the result that they almost invariably get worse; whereas improvement is likely to follow the prescription of a generous diet with wine, syrup of the iodide of iron, arsenic, and cod-liver oil. In conclusion, a series of cases was described illustrating the various points referred to in the lecture.

In the *Practitioner* (1892, ii. p. 401) there appeared a paper on the same theme by Kent Spender, of Bath, who also insisted strongly upon the extreme importance of diagnosing between rheumatic arthritis and gout, and of the necessity of treating the two diseases on opposite lines. He recommends that rheumatoid patients should be well fed, should have meat, and should not be subjected to restrictions of diet. Malt liquors, port and burgundy are beneficial. They should reside in a dry, sunny locality, sheltered from cold wind, and if possible should winter in Egypt or the Canary Isles. As drugs, he recommends cod-liver oil, iron, arsenic and quinine; as hypnotics and anodynes, chloralamide,

chloral and Indian hemp, and bromide. The use of morphia should be delayed as far as possible. Salicylate and salicine should only be given during febrile attacks. The joints should be wrapped in flannel, sponged with hot water, or rubbed first with acetic turpentine liniment and afterwards with oil. Blisters, if used, should be applied above, and iodine should also be painted in a ring form above, but not over, the joints. The diseased joints may be supported, but not fixed, by millboard splints or other means in the earlier stages, but when the active symptoms have subsided, exercise is to be recommended. Vapour baths should be avoided, but benefit is obtained from treatment at such bath-places as Bath or Aix-les-Bains.

The same observer (*Brit. Med. Journal*, 1892, ii. p. 1332) calls attention to the diagnostic value of Heberden's nodes upon the terminal joints of the fingers, which he regards as affording evidence of rheumatoid arthritis rather than of a gouty condition. An abstract of a paper by Emil Pfeiffer, who maintains the contrary theory, will be found in the "Year-Book" for 1892, p. 186.

INFECTIOUS FEVERS.

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1. Treatment of typhoid fever by intestinal irrigations.

Shuell (*New York Med. Journal*, Sept. 2, 1893) urges that the principles of treatment in typhoid fever should be:—(1) To remove as early as possible all ptomaines and decomposing substances from the colon. (2) To destroy or neutralise the effect of all micro-organisms above the cæcum by proper internal germicides. (3) To enforce proper dietary, and to treat rationally symptoms and indications as they arise.

The first indication may be met by thorough irrigation of the colon, which can only be effected by passing a tube above the sigmoid flexure. "The ordinary colon tube" may be used, but he prefers a soft rubber tube of a calibre of 25 to 32 American scale and about 3 feet long, which should be attached to a fountain syringe. While this is being introduced the stream should be allowed to flow, and may then be readily made to pass the sigmoid flexure and reach to, or near to, the cæcum. The water used should be warm and rendered aseptic by previous boiling. At least half a gallon of water should be injected in adults. This will distend the gut, remove the accretions from the sacculi, and result in an evacuation of foul-smelling fæces intermixed with scybala. To effect the most good, the injections should be employed early in the disease, before high fever and severe nervous symptoms show themselves. They may be repeated, if necessary, at intervals of three days, for the first week or ten days. The only precaution is that they should be used warily when the stage of necrosis of the glandular tissue is reached, as the solitary glands of the large intestine are affected in a large proportion of cases. In every case in which the irrigations were used the cases "were rendered comparatively light," though not materially shortened in duration.

2. Boracic acid in typhoid fever.

I. Tortchinsky (*Bolnitchnaia Gazeta Botkina*, No. 48, 1892) has tried boracic acid in 240 consecutive cases of enteric fever during an epidemic. The results were excellent. Only 9 patients died, every one of whom succumbed during the stage of convalescence, in consequence of getting up too soon, or of dietetic error. The remaining 231 made a speedy and complete recovery. In all the cases the patient was first given from 2 drachms to $\frac{1}{2}$ ounce (according to age) of castor oil, with from 5 to 20 drops of turpentine oil. Immediately after these drugs had acted the administration of boracic acid was commenced, the remedy being given internally, either in powder or in solution, in from 10 to 15 grains to adults, in from 3 to 10 to children, three or four times a day. When bronchitis was present the drug was combined with expectorants and hydrochloric acid. As a rule, within from three to five days fever and diarrhœa markedly decreased, tympanites disappeared, the stools lost their offensive odour and became natural in appearance, the urine became abundant and normal in all respects, the tongue and skin moist, and the subjective state good. As soon as the general improvement set in, the acid was discontinued and tonics were given. Under the treatment the disease ran a very mild course, its duration was considerably shortened, and complications were very rare. The most striking effects of the acid were obtained in cases which came under treatment in the initial periods of the affection. It was further found that the beneficial action of the remedy could be intensified by combining it with small doses (from 2 to 5 grains) of anti-febrin, quinine, naphthalin, or salol. The combination with quinine proved especially useful in late stages of typhoid, with tremor, delirium, and other cerebral symptoms, as well as in the case of relapses. No untoward accessory effects from boracic acid were ever observed. The writer arrives at the conclusion that the method is the cheapest, simplest, most harmless, and most efficacious of all yet known. He also obtained equally satisfactory results from the acid in the summer diarrhœa of children.

3. Venesection in typhoid fever.

Sacaze (*Rev. de Méd.*, 1893, No. 1) relates 2 cases of typhoid fever in which benefit was derived from venesection. In one, a young woman aged twenty-five, erysipelas of the face occurred as a complication about the twenty-eighth day. On the thirtieth day an epileptiform convulsion occurred, and similar convulsions on subsequent days. On the thirty-second day an attack occurred in the morning, and venesection was then performed to about 6 ounces. There were two more fits the same day, but the

patient then began to improve, and ultimately recovered. At the time the venesection was made she appeared to be moribund. In the second case, a woman aged 22, there was great adynamia, accompanied by epileptiform attacks, and vomiting at an early stage; and on the tenth day she was bled to about 5 ounces. The convulsions did not recur, the vomiting ceased, and the adynamia diminished; but the patient succumbed on the fourteenth day, with urine almost solid. In a case of acute nephritis in a man aged fifty-two, epileptiform convulsions did not recur after venesection to about 7 ounces, the urine became more abundant, and the man recovered. Sacaze made some experiments with the blood and urines to ascertain their toxicity. The fluid squeezed out of the clot from the blood in the second case was shown to be exceedingly toxic to rabbits. The urine in the first case was shown to be considerably more toxic than the normal; after the venesection no diminution in the toxicity was noted for several days, then a progressive diminution set in. The symptoms produced in the animals experimented on were subnormal temperature, dyspnœa, convulsions, and great depression. Sacaze concludes that nephritis, as well as uræmia, is due to the retention in the blood of toxic bodies which ought to be eliminated by the kidneys, and that venesection not only tends to check such symptoms as convulsions, coma, delirium, vomiting, etc., but also most of the other functional derangements. He holds, therefore, that it is a justifiable mode of treatment in typhoid fever and in other infectious diseases accompanied by intense renal disease.

[Typhoid fever with intense renal disease is very rare, so that this treatment must be of very limited application.—S. P.]

4. The treatment of typhoid fever.

Latham (*Lancet*, March 11, 1893) writes: If a patient comes under observation during the first week and there is no diarrhœa, give 5 grains of calomel, the dose to be repeated the following day if not more than two copious evacuations are produced by the first dose; if there be slight diarrhœa, $\frac{1}{4}$ of a grain, or $\frac{1}{2}$ a grain, or 1 grain of opium may be added. If diarrhœa is a marked symptom at the commencement of the disease, or if violent meteorism, or albuminuria, or great anæmia exists, the calomel is not to be given. Where calomel acts beneficially the temperature is reduced, the beneficial remission is persistent, and a considerable improvement in the whole febrile period takes place. After giving one or two 5-grain doses of calomel, the remedy may be given in 1- or 2-grain doses once or twice a day in combination with opium and ipecacuanha, adjusting the opium so that there shall be not more than three evacuations daily, and suspend-

ing it at once if it paralyses the peristalsis of the bowels. Or 3 to 5 grains of mercury with chalk, or 2 grains of powdered ipecacuanha with some confection of roses, may be given as a pill.

In typhoid the gums are not readily affected by mercury, but if they become so the administration must be suspended.

Ipecacuanha is a useful addition to the mercury, as in small doses it retards the peristaltic action of the intestines, and, seeing its beneficial unexplained action in dysentery, it may have some similar action in typhoid fever. Latham thinks care should be taken to avoid constipation, by giving either a calomel or grey powder, or by an enema given daily of soap and water.

Subnitrate of bismuth and tannic acid are the best remedies for diarrhœa, but the insoluble nitrate alone should be used, and the liquor bismuthi et ammoniæ citratis is an intestinal irritant and must be avoided, and care must be taken that, whatever preparation of bismuth is given, it shall contain no arsenic. *Tannic acid* has the advantage over bismuth that it is antiseptic; it may be given in 3- to 5-grain doses two or three times daily, and best as pills. *Oil of turpentine* in 10-drop doses every two hours during the day and every three hours during the night is of great value when the tongue gets dry, red, and chapped, and much meteorism prevails.

β -naphthol is a most powerful antiseptic, and may be given in doses of from 3 to 5 grains every two, four, or six hours.

For diet Latham prefers milk and water, 5 ounces of milk with 1 or 2 ounces of water being given every two hours; but it is injudicious to feed a patient oftener. If necessary, the milk may be peptonised; soups and beef-tea are less nutritious than milk, and may increase the diarrhœa.

5. Treatment of typhoid fever by carbonate of guaiacol.

Holscher (*Sem. Méd.*, June 21, 1893) treated 60 successive cases of enteric fever by this method without a single death.

In cases where the treatment was employed from the very commencement (the diagnosis being subsequently confirmed by bacteriological examination) an abortive action was produced on the disease, the fever rarely attaining any great height.

In other cases, especially in severe cases, the effects of the guaiacol were most marked, the tongue becoming moist, the appetite returning, and the motions becoming more formed, and where there was diarrhœa it soon ceased.

A very high degree of pyrexia does not yield to guaiacol, which is not an antipyretic but an intestinal antiseptic, but by combining

it with acetanilide a greater antipyretic effect is obtained than by giving acetanilide alone.

The carbonate of guaiacol has a most favourable effect where there is bronchitis, lessening the dyspnœa and increasing the expectoration. Owing to the antiseptic action of guaiacol, toxins are not formed in the intestines, and consequently ataxy and hallucinations are relatively rare in cases treated by it.

The drug has also been tried by **Baker** (*New York Med. Record*, Sept. 30, 1893) in 8 cases with satisfactory results.

6. Treatment of typhoid fever by carbolic acid.

Sloan (*Brit. Med. Journal*, March, 1893) followed Charteris' treatment of typhoid fever with carbolic acid in 10 cases. According to the author the carbolic acid not only can cut short the course of typhoid fever, but can act as a preventive. He gave to each patient $2\frac{1}{2}$ grains of carbolic acid in a pill thrice daily. After three days of such treatment the fever disappeared. The treatment, however, was still kept up, one pill being taken in the morning and one in the evening, and later one pill daily was given. In 4 of the 10 cases diarrhœa came on when the pills were discontinued, and they had to be resumed. Convalescence in all the cases was rapid.

7. The ice cradle in typhoid fever was originally introduced by **Samuel Fenwick**, and is described by **Soltau Fenwick** in the *Practitioner*, Nov., 1892. It is an arrangement by which a constant current of cool air is secured as a substitute for the cold bath. It consists of an iron surgical cradle, from the central bar of which are suspended several small zinc pails half filled with ice. The patient lies on the bed, covered by muslin, and the cradle, enveloped in a light counterpane, is placed over him. Although the mean temperature of the cradle can seldom be reduced more than a degree or two below that of the surrounding atmosphere, it suffices to effect a reduction of several degrees in the bodily temperature.

8. Treatment of measles by eucalyptus inunction.

Shelley, of Haileybury (*Practitioner*, Nov., 1893), made a trial of this treatment in a recent epidemic of measles. The treatment has been advocated of late in the case of scarlet fever, and it has been urged that the same method is also successful in combating other exanthemata. "About the middle of the epidemic we decided to treat all the cases in one ward, as it became filled up by admissions, with oleusaban—the special preparation of eucalyptus recommended for this purpose." The subsequent course of events, as given by **Horace Savory**, is: "The epidemic totalled 73 cases, and the oleusaban treatment was carried out in

five of these, all in one ward of 5 beds, and were not selected cases. Inunction was begun directly they came under observation, the oleusaban being rubbed over the body night and morning for three days, and subsequently once a day for the first week. Eucalyptus emulsion was also given internally; some of the fluid was placed in saucers about the room, and when cough was troublesome, eucalyptus inhalations were given." The immediate effect of the treatment was great drowsiness, the patients being roused with difficulty to take their food. The patients were not markedly thirsty, and they complained of little discomfort; all five had tongues thickly coated, contrasting markedly with the tongues of others under different treatment. In one case the rash was coming out when the treatment was begun, but in the other four its appearance seemed to be delayed, and when it did appear was very copious, much raised, and of a notable dusky tint.

During the fourth, fifth, and sixth days four of the patients developed laryngeal and bronchial catarrh, with complete loss of voice in two cases, and one developed a severe attack of pneumonia, affecting both bases in patches; convalescence was in all five cases more tardy than usual, and desquamation much more profuse in all except in the one whose rash was coming out before treatment was begun. The results of the oleusaban treatment were not such as to encourage a more extended application.

9. Treatment of diphtheria by papayotin with carbolic acid.

Levy and Knopf (*Berlin. Klin. Woch.*, No. 31, 1893) find that cultures of Loeffler's bacillus are absolutely sterile when the addition is made of carbolic acid in the proportion of .5 per cent., but nevertheless remain virulent. If a small quantity of papayotin be added to the carbolised culture, and the mixture kept at a temperature of 37° C. for two days, its virulence is considerably diminished. But rats inoculated with this culture become seriously ill. It would therefore appear that papayotin exercises a favourable action on the diphtheritic poison. These facts suggested to the authors of this paper that possibly diphtheria might be advantageously treated by a combination of papayotin with carbolic acid; for while the papayotin would dissolve the false membranes, the carbolic acid might then penetrate deeper into the tissues and act more effectively against the bacilli; in addition, the papayotin might diminish the virulence of the poison derived from the bacilli.

See "Medical Diseases of Children," p. 189 *et seq.*

10. Treatment of diphtheria by sulphur.

De Mund (*New York Med. Record*, Oct. 7, 1893) recommends

that sulphur be dusted upon the diseased part every half hour or hour, day and night, and that a gargle should be used frequently of sulphur suspended in water. This is of paramount importance, and spraying is of little use. In infants that cannot gargle, dusting the part with sulphur is alone of any use. The burning of sulphur upon live coals every six hours in the room should not be neglected. For internal use he gives aconite tincture and perchloride of iron, and a large dose of calomel should precede all other internal administration.

(The treatment by sulphur, which De Mund here calls the "abortive treatment," was recommended in 1890 by Charles Smith, who employed insufflations of sublimed sulphur. See "Year-Book" for 1891, p. 180.—S. P.)

11. Therapol in diphtheria.

I. S. Haynes (*New York Med. Journal*, July 15, 1893) has used therapol in 8 cases. It is a vegetable oil carrying 10 volumes per cent. of ozone; it does not attack healthy tissue, and, being perfectly unirritating, causes no discomfort to the most sensitive mucous membrane; consequently a child's nostrils may be syringed and its throat swabbed with it every half hour if necessary. He recommends its application to throat with a swab of absorbent cotton wool at the end of a stick 6 inches long, and to the nose by syringing about 15 to 20 minims at a time into each nostril, keeping the child on its back, which favours the running of the ozonised oil back into the throat. Where the larynx is involved, calomel fumigations should also be used.

12. Treatment of diphtheria by chromic acid.

Lescure (*La France Méd.*, Jan., 1893) insists on stimulating general treatment, together with nux vomica, cinchona, and alcohol, and on assisting elimination of toxic matters by milk, coffee, tea, and alcohol. He advises as local applications a solution of chromic acid—1 in 5—and another solution of tannic acid in glycerine. He gives 3 drops of tincture of nux vomica every twenty-four hours to children, increased up to 8 drops a day, according to the age of the patient, and he also gives a mixture containing tincture of eucalyptus. Of 54 cases so treated none died. The duration of the malady was from nine to fifteen days; where the treatment was commenced early, a cure was usually obtained in four or five days. He believes the treatment shortens the duration of the malady, and that, while destroying the false membranes, it does not injure the mucous membranes, and that it is easy of application.

The important part of the treatment is the local application of the chromic acid, which, by rapidly destroying the false

membranes, lessens or arrests the production of the toxins; the chromic acid solution is applied to the false membrane once or twice in each twenty-four hours, and the tannic acid applications are made three or four times only.

13. Treatment of diphtheria by methylene blue.

A. Rose (*New York Med. Record*, Aug. 26, 1893) has employed methylene blue with good results after seeing the article by A. Kasem Beck in the *Centralbl. f. Klin. Med.*, June 24, 1893, who applied an aqueous solution (1 in 9) two or three times daily to the ulcerated membrane. Beyer (*Allgemeine Cent. Zeit.*) treated 50 cases of diphtheria by the internal administration of methylene blue. The urine becomes blue, even where the drug is only used topically. The methylene blue can be given in the form of lozenges.

14. Treatment of diphtheria by iodine, carbolic and citric acids.

Oegowski (*Nowing Lekarskie*, 1892) recommends treating the false membrane with the following solution:—

Crystallised carbolic acid	...	...	...	} āā lxxv. grs.
„ citric acid	...	...	...
Tincture of iodine	...	...	...	} āā 3iijss.
Cognac	...	...	...

The application should be made every two or three hours with a probe and cotton wool. In many cases under the author's care rapid cures were thus obtained, even in some very severe cases. Older children used, in addition to the above, a gargle of chlorate of potassium. No toxic symptoms from the carbolic acid were ever observed.

15. Euchlorine in diphtheria.

L. D. Ellis (*Brit. Med. Journal*, 1893) has treated diphtheria with euchlorine since 1887, and writes that records of the successful treatment could be obtained in some 200 consecutive cases. The aqua chlorini will not do any good, and he orders as follows: About 20 to 30 grains of potassium chlorate, with 10 minims of strong hydrochloric acid, will fill an 8-ounce bottle with sufficient heavy yellow gas to make a good solution on shaking up with water. If the bottle is damp the reaction is useless, as the resulting gas in solution does little good. In some cases the solution is diluted, and in some the free hydrochloric acid is neutralised before using. The mixture can be made palatable by adding glycerine and spirits of chloroform, and is readily taken by children too young to gargle, by a few drops every half hour; but it is very efficacious when used as a spray. As a gargle for children a much weaker solution will do well.

16. Treatment of diphtheria.

J. R. Culkin (*New York Med. Record*, Oct. 14, 1893, p. 489) writes on the frequently injurious effects of the oft-recommended practice of forcibly endeavouring to remove diphtheritic membrane from the throat. "Many times applications are made as thoroughly as can be to the throat with powerful germicides, which, in a test tube, are sufficient to destroy the life of the germ, but in the throat the swab is quickly enveloped in mucus, and you only succeed in irritating the throat, giving great pain to your patient, causing him to vomit and to sink back in bed in every way worse for the interference." What good reason can be given for picking up a poor child every hour, forcibly opening its mouth, causing the glands at the angle of the jaw to be compressed, pressing into its throat a swab laden with a germicide, and wiping it about, withdrawing it covered with mucus, pus, and, perhaps, a little membrane, and leaving the throat raw and bleeding? This is done hourly, day and night, and the little patient gets weaker and weaker, and the diphtheria spreads rapidly. Such raw surfaces get covered again in an hour or two with fresh membrane, and the swab often carries to parts not already infected shreds of membrane and infects them.

[We cordially endorse these remarks of Culkin. It is almost inconceivable how the treatment, often recommended, can be carried out of irrigating and painting with disinfectants, every half hour, day and night, the nose and throat, without interfering with rest and with food in young children, and without exciting violent resistance and consequent exhaustion. Such directions have been frequently commented on in previous "Year-Books."—S. P.]

17. Treatment of diphtheria by eucalyptus and salicylic acid.

Simon (*L'Union Médicale*, June 3, 1893) applies to the area affected the following solution :—

Salicylic acid	...	...	...	...	gr. xv.
Infusion of eucalyptus	...	...	...	...	} āā ʒiss.
Glycerin	...	...	...	...
Alcohol, enough to dissolve.					

After this has been applied, he paints on to the same part a solution of equal parts of perchloride of iron and glycerine. In addition, he irrigates the mouth and nose with a boric or carbolic acid solution. He also thinks it useful to employ eucalyptus vapour.

18. Treatment of diphtheria by tincture of myrrh.

Stroll (*Journal de Méd.*, p. 515, July, 1893) recommends the internal administration of the following:—

Tincture of myrrh	...	...	...	...	5j.
Glycerin	...	...	...	...	3ij.
Distilled water to	...	...	...	...	3x.

The dose for children under two years of age is a teaspoonful, a dessertspoonful for children from two to fifteen years, and a tablespoonful for adults. A dose should be given every hour during the day, and every two hours in the night, but in grave cases twice as often. The dose and the frequency of administration may be lessened as the disease becomes less severe, but it is most important to keep up the treatment during the night. The urine, after a few days, becomes charged with myrrh, and this may give rise to frequent micturition. The treatment should then be discontinued.

19. Cocaine in variolous and varioloid infection.

E. Pepper (*Amer. Journal Med. Sci.*, March, 1893) calls attention once more to the value of cocaine in small-pox and varioloid. By the use of cocaine, variolous and *a fortiori* varioloid poisoning can frequently be arrested in a marked degree. The disorganisation of the blood is generally less rapid and less extensive; the fever is less severe and of shorter duration; an incomplete evolution or semi-abortion of the vesico-pustules or pustules is of frequent occurrence when cocaine has been regularly employed during the second period of the disease; finally, the various visceral congestions and inflammations are less frequent and less intense. When cocaine is given by the stomach, 5 drops of a 4 per cent. solution are conveniently administered four times in the twenty-four hours to a child aged five; at the age of ten, 10 drops four times in twenty-four hours; and so on, the dose being increased by 1 drop four times during each twenty-four hours for each year of age; at twenty years of age, 20 drops are given four times in the twenty-four hours. Each dose is to be given in a small quantity of water, or otherwise, according to taste. One-half of these quantities is frequently sufficient. An agreeable mode of giving the drug is in sweetened pastilles, each containing $\frac{1}{24}$ gr. of cocaine with or without a small quantity of pepsin. Cocaine may also be given in suppositories at intervals of six or eight hours, the quantity thus administered in twenty-four hours never being greater than that given by the mouth. The hypodermic method is not recommended by the author except in the incipient stage, when the drug cannot be given by the mouth or the rectum. The dose should be a quarter of that indicated for

use by the mouth. The effect of the cocaine must be carefully watched, but the author points out that in variola tolerance of cocaine is strongly marked. This treatment does not exclude the use of other remedies, either general or local; but Pepper says that in many cases in which cocaine is methodically given, little or no further treatment is required. He suggests that during an epidemic of small-pox it would be interesting to study the possible action of the drug as a prophylactic. Pepper says the cocaine method of treatment was first introduced by Luton.

20. Treatment of cholera by carbonic acid.

Rosenbach (*Berlin. klin. Woch.*), remembering that Fraenkel had discovered that the bacillus of cholera was prevented from developing by carbonic acid, tried some experiments on the effect of injecting carbonic acid into the stomach and intestine, and showed that it was possible to introduce it into the small intestine either by the stomach or the rectum. The only inconvenience which can arise is the resistance of the ileo-cæcal valve and the pylorus; but this can be overcome by using morphia and frequently repeating the injections. Rosenbach recommends, instead of employing opium by the mouth, to inject the opium solution by a Pravaz syringe.

21. Salol in cholera.

Girode recently presented to the Société de Biologie (*Sem. Méd.*, May 31, 1893) two masses of salol, weighing respectively 1 gramme 55 centigrammes and 1 gramme 25 centigrammes, which were found in the stomach of a woman who had died of cholera. She was admitted to the Beaujon Hospital on April 17, 1892, and died on the 20th. On the 18th she took, at intervals of three hours, six doses of salol of 50 centigrammes each. On the following day the salol was discontinued on account of the vomiting which followed its administration. There is the strongest presumption that part of the salol was vomited immediately after it was swallowed. On post-mortem examination (less than three hours after death) two lumps were felt at the most dependent part of the stomach, about the middle of the greater curvature. On opening the viscus the lumps were found to be caused by the masses of salol referred to. The fragments of the substance were agglutinated together and heaped into a flattened concavo-convex mass; each of the lumps lay in a small pouch accurately moulded to it. At the corresponding points the stomach wall was thinned and congested. On microscopic examination the mucous membrane in the pouches in which the masses of salol had lain showed epithelial necrosis, which contrasted markedly with the relatively healthy condition of the other parts of the viscus. The contents of the stomach and

intestines were of greenish hue and rich in microbes, especially the comma vibrio. The mucous membrane of the small intestine presented numerous superficial erosions and follicular ulcers, both isolated and agminated, in Peyer's patches. This case seems to Girode to raise the question of the propriety of giving salol, though so strongly recommended by Hueppe and others, in a disease in which the mechanism of digestion is so disordered as it is in cholera. Not only was the salol useless, but it might have caused grave lesions. It will therefore, in Girode's opinion, be well to use salol only with the greatest caution in ulcerous conditions of the digestive tract.

MEDICAL DISEASES OF CHILDREN.

BY DAWSON WILLIAMS, M.D. LOND., M.R.C.P.,

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1. Artificial feeding of infants.

Sterilised milk has not in practice quite fulfilled the expectations with which it was introduced as a food for infants ; it has been asserted that it is less easily digested than untreated milk ; that it is imperfectly digested owing to its not being curdled in the stomach, and that, owing to the loss of some unnamed constituents, its continued use is liable to be followed by scurvy. Finally, it has been accused of failing to achieve the main result hoped from its use—namely, the prevention of septic diarrhœas. Two common sources of fallacy have been pointed out by Soxhlet and others ; the one is that the milk has frequently begun to decompose before it has been submitted to the process of sterilisation. As a result the milk actually received by the child is acid, and contains various products of decomposition which are poisonous and irritating to the intestinal mucous membrane. The second fallacy is that the milk is not completely sterilised, owing either to a system which is radically inefficient, or to the use of milk which, having been kept for some time, is already full of microbes, and by so much the more difficult to sterilise.

A very interesting account of the precautions which it was found necessary to take in the new Children's Hospital at Leipsic is given by Carstens (*Jahr. f. Kinderheilkunde*, 1893, xxxvi., s. 144). The milk was obtained from a farmer who guaranteed the purity of his milk and the healthiness of his cows. It reached the hospital three-quarters of an hour after leaving the farm. It was sterilised in the kitchen on a system devised by Prof. Heubner himself, and given either unmixed, or diluted with a solution of milk-sugar. The result of its use was a deplorable amount of dyspepsia and diarrhœa among the atrophic infants for whose advantage it had been especially introduced. The infants were now removed from the ward in which they had been kept together, and distributed among the other children ; special precautions were taken also to prevent the infection of the children by the nurses, utensils, etc. The nurses were required

to wash their hands on every occasion before giving an infant milk, and every soiled napkin was placed in a solution of lysol (1 per cent.) for six hours before being sent to the wash. It was proved by experiment that this disinfection was effectual. At the same time Heubner replaced his own system of sterilisation by Escherich's; the milk was sterilised several times a day, and the brushes for cleansing, as well as the nipples, were kept in a 2 per cent. solution of boric acid, renewed daily. The results from this method were not satisfactory. It was ascertained that the method of cleansing the bottles was inefficient, and in consequence Heubner reverted to the method of sterilising each bottle of milk separately. The clinical results, however, remained as bad as ever. Given even to a healthy infant in alternation with its mother's milk, the sterilised milk produced dyspepsia. Carstens then, at the direction of Heubner, went into the whole question minutely. He examined first of all the method of cleansing the bottles. He found that a certain number of bottles supposed to be quite clean showed on the inner side a slight white cloudiness. The injurious effect of this slight, barely visible cloudiness was shown by the following experiment:—

A thoroughly clean bottle (1) and a "cloudy" bottle (2) were each partly filled with milk which was ascertained to be sterile; the bottles were kept at the temperature of the room until the next day, and plate cultures were then made. It appeared that bottle (1) contained 780 microbes, while (2) contained 11,700. The following method of cleansing the bottles was then introduced:—

Each bottle as soon as it was finished by the infant was thoroughly rinsed out under the tap and left full of water. The next process was to wash the bottles well with a brush and soft soap in hot water. Next they were rinsed out several times with cold water, wiped and dried; the servant who did all this concluded her part of the duty by placing the bottles in a bottle-holder or basket, necks down. The bottles were now inspected by a trustworthy nurse, who marked any bottle which showed the least sign of cloudiness or fleck with a red chalk, as sign that it must go back to be cleaned again.

Chemical examination of the milk showed it to be of good quality. The cows were milked into enamelled metal vessels with tight-fitting lids provided by the hospital. These vessels were cleaned daily at the hospital with a 5 per cent. solution of soda. On arrival at the hospital the milk was submitted to the following tests: the degree of acidity was ascertained (by Plaut's method of titration), a sample was placed in the incubator for

three hours, and the degree of acidity again ascertained. If the acidity was found to have increased, the batch of milk was rejected; if not, the milk was distributed into the bottles, which (to the number of sixty) were sterilised. A further precaution was taken: two bottles were taken from among the sixty and placed in the incubator for three days. If at the end of that time the milk had not developed a bitter taste and had not changed colour, the batch was given out for the use of the infants; if it had undergone the change indicated, the whole batch was condemned. This change of colour was noticed frequently, even when the milk had not originally presented a high degree of acidity, and in all these instances it was found to have a bitter taste. The nature of this change, which has been noticed by other observers, has not been precisely ascertained; it is probably due to the fact that some chemical change has commenced in the milk before sterilisation which that process fails to arrest. The net result of Carstens' experiments was thus far from satisfactory, for though a sterile milk was obtained, the final product was frequently unfit for use. Such milk given to infants caused illness. It became clear that further improvement could only be attained by ensuring greater purity of the milk as delivered from the farm. A visit was paid to the farm. The state of the stalls left a good deal to be desired, but the milk itself was carefully treated. It was, however, put through a filter-cloth, and this, as Renk, Soxhlet, and others have shown, is very liable to increase the amount of microbic impurity. To test the point, plate cultivations were made, with the least possible delay, from samples of milk drawn direct into a test tube, and from milk introduced into the test tube after it had been passed through the cloth. After four days no colonies developed in the former, while the latter was covered with colonies. In future the milk was filtered at the hospital through wire sieves. The result was not yet quite satisfactory, as the milk when delivered at the hospital, some three hours after milking, contained an undue number of microbes; if kept, even upon ice, for four or five hours, the number increased (in one instance it was found to be between five and six times that present when the milk was delivered). As the delay in delivery appeared to be responsible for the deterioration of the milk, a new dairy only five minutes from the hospital was tried, and the milk from the two dairies was compared. The milk from the nearer dairy was found to be at the time of delivery less acid, and to contain fewer microbes (43,500 in 1 c.c. as compared with 76,875). At the end of four hours, the difference was even greater. Further, by taking the precautions

already mentioned to ensure the thorough cleanliness of the bottles, it was found possible to make certain that the milk from the nearer dairy was sterilised, whereas there was a failure to sterilise completely the milk from the more distant dairy on four out of five days on which the point was directly investigated by plate experiments. A fresh complication is introduced when it becomes necessary, as is the case in infants, to dilute the milk. Heubner used the mixture with solution of milk-sugar recommended by Soxhlet (*see* p. 188). The solution was made with sterilised water, fresh for each sterilisation. The actual process of sterilisation was performed as follows:—

The bottles, to the number of sixty, were filled three-quarters full and placed in a container just large enough to go into the largest saucepan in the kitchen. They were kept in boiling water in this saucepan, with the lid closed, for three-quarters of an hour. They were then rapidly cooled; the bottles were closed by an indiarubber disc fixed by a metal cap (Soxhlet's method), and by cooling rapidly this cap was made air-tight with more certainty. The fifty-eight flasks were kept in the cellar during the three days that the two test flasks were in the incubator as described above. In this way milk which was really sterile was delivered into the wards, and there remained only to devise the precautions to be taken to prevent its being contaminated there. The nurse is required to change the child's napkins immediately before and immediately after each meal, and, after changing the napkins, must wash and disinfect her hands. The bottle is to be warmed, unopened, by being placed in hot water, and that the proper heat has been attained is to be ascertained not by tasting but by putting the bottle to the cheek; as the indiarubber cap is removed, a hissing noise of air entering the bottle ought to be heard. If this characteristic sound is not heard, the bottle has not been properly closed, and its contents should be poured away. The nipple is to be slipped over the neck of the bottle without the part which is to go into the mouth of the child being touched by the nurse's hand. The nipple and the indiarubber cap are to be washed in a 2 per cent. solution of soda with a brush, and kept in a 5 per cent. solution of boracic acid. Any milk left in the bottle when the child has taken as much as it will is to be thrown away. If the child has been accustomed to a sweeter milk, it may be necessary to add a small quantity of saccharin (about one-third of a grain). The milk deteriorates when kept long after sterilisation, and should not be used if it has been more than six days in a cool cellar and twenty-four hours in a warm room.

Soxhlet, in an address to the Munich Practitioners' Society (*Münch. med. Woch.*, Jan. 24, 1893), discussed once more the differences between human and cow's milk, and made a suggestion, founded on analytical and theoretical considerations, which has at least the great merit of simplicity. The thickness and firmness of the curd produced from any milk in the stomach varies with three factors:—(1) The degree of concentration in which the casein is present in the solution; (2) the amount of the lime salts present; (3) the degree of acidity of the solution. In cow's milk all three factors combine to make the curd tough and thick, for, compared with human milk, cow's milk contains twice as much casein, six times as much lime salts, and is thrice as acid. Hitherto attention has been directed almost exclusively to the first point—the larger quantity of casein. Cow's milk diluted with water, and neutralised, coagulates in almost the same way as human milk; neutralised cow's milk, however, is not suitable for sterilisation, as the milk-sugar is altered; the milk becomes brown, and has a burnt taste (human milk when sterilised undergoes a similar change). In cases in which very dense curds form in the stomach owing to an excessive secretion of acid or of lime salts by the stomach, neutralisation of the milk may be useful. For the reason already mentioned the milk must be neutralised after sterilisation. Soxhlet recommends as a general rule the addition of 0.1 gramme of bicarbonate of sodium to 100 grammes of undiluted milk (gr. iss to ziiss about). Mere dilution, however, will not meet the difficulty, for if it is carried to the extent necessary to obtain a curd as fine as that of human milk, the infant will not get enough nourishment. He adopts the following comparative analyses of human and cow's milk from J. König:—

	Water.	Proteids.	Fat.	Milk-Sugar	Ash.
Human milk . . .	87.41	2.29	3.78	6.21	0.31
Cow's milk . . .	87.17	3.55	3.69	4.88	0.71
Excess or deficit in cow's milk . . .	- 0.24	+ 1.26	- 0.09	- 1.33	+ 0.40

By adding to cow's milk one-half part of a 6 per cent. solution of milk-sugar a solution is obtained which contains about the same proportions of proteids and milk-sugar as human milk, but the mixture is very deficient in fat (to the extent of 1.32 per cent.). Soxhlet proposes—a similar proposal on identical grounds had previously been made by Heubner and Hofmann—to make

good this deficiency by increasing the quantity of milk-sugar. Superfatted milk would be preferable in theory, but practically it is found impossible to sterilise such milk satisfactorily, as the fat runs together and is difficult of digestion. The hydro-carbon, he suggests, may be replaced by a carbohydrate, which meets the same needs of the organism ; 243 parts of milk-sugar are required to produce the same amount of work as 100 parts of fat. To make up, therefore, for the missing 1·32 per cent. of fat in the artificial milk it will be necessary to add 3·19 per cent. of milk-sugar. By adding to cow's milk a half-part of a 12·3 per cent. solution of milk-sugar, a mixture is obtained which contains the same quantity of nutrient material as human milk, the only difference being that a third of the fat is replaced by a corresponding quantity of milk-sugar. In the following table the composition of this mixture and that of human milk are contrasted :—

	Human Milk.	Cow's Milk with one-half part of a 12·3 per cent. solution of sugar of milk.*
Water	87·41	85·30
Proteid	2·29	2·37
Fat	3·78	2·46
Milk-sugar the equivalent of deficient fat . . . }		3·19
Natural milk-sugar . .	6·21	3·25
Milk-sugar to make up the natural deficiency in milk-sugar . . . }		2·96
Ash	0·31	0·47

Soxhlet does not admit that the digestibility of milk is affected by boiling. It is true that boiled milk yields a smaller curd, and requires more rennet to curdle it when the experiment is made in a test-tube ; but in the stomach the event is different. The effect of heating milk is to render the soluble lime salts insoluble, and this withdrawal of the lime salts has an unfavourable effect on the process of curdling ; but the stomach, when the milk is introduced into it, secretes acid, or, more probably, lime salts, which restore the proportion of lime salts necessary for rennet curdling. As a matter of fact, boiled milk curdles inside the stomach in just the same way as unboiled milk.

Chapin (*New York Med. Journal*, Sept. 16, 1893) fully recognises the importance of obtaining a milk for sterilisation which

* The addition of gr. liv. milk-sugar to 3i of water will yield a solution of about 12·3 per cent.

has not been recklessly contaminated by dirty milkers in dirty cow-byres. "If more scrupulous care were exercised," he observes, "at the source of the milk supply, and the impurities completely separated by the centrifugal process, in the great majority of cases no means at all for preservation need be employed, and an advance in this direction is urgently needed."

Rotch (*Arch. of Ped.*, Aug., 1893) has stated that the use of fine clean sand as a bedding for cows has a wonderful effect in preserving the milk from microbic impurity; milk might thus be obtained which was almost sterile. Chapin found that the loss of weight observed in infants in his hospital wards fed on sterilised milk could be checked by using an infusion of wheat, oat, or barley-meal, acted upon to a certain degree by diastase, to dilute the milk. The details were worked out for him by **Eiloart** (*loc. cit.*). The object was to devise a household process for preparing at a minimum cost, and with materials everywhere available, a digestible food containing, with the albuminoid constituents of the grain, carbohydrates in a soluble form, and but little of the insoluble starch. At the same time excess of sugar was to be avoided. This necessitated the conversion of the starch into dextrin, or into dextrin with a moderate proportion of maltose. The following is Eiloart's receipt:—

Make 2 oz. of meal into gruel with $1\frac{1}{2}$ pint of water in the inner vessel of a double boiler; take out the inner vessel and add 26 oz. of cold water, to which a small teaspoonful of malt extract is added at the last. Let the mixture stand fifteen minutes. Put back the inner vessel and heat it again for fifteen minutes; strain through wire gauze. If, as in diarrhoea, it is desirable to give a food containing less maltose, the mixture should stand after the addition of the cold water for only three minutes. The resulting fluid in either case is given with milk.

2. Diphtheria.

Further bacteriological observation and experiment has on the whole confirmed the original conclusion of Loeffler that diphtheria is due to a specific bacillus which flourishes at the seat of infection, does not infect the blood or the system generally, but produces its systemic effects by means of soluble toxins. Numerous observers have shown, however, that cases occur not to be distinguished clinically from diphtheria, but due to streptococci and staphylococci. When it is said that these cases are not to be distinguished clinically from true diphtheria due to the Klebs-Loeffler bacillus, it is meant that the appearances presented on examination of the throat are so nearly the same that no distinction can be thus drawn with certainty.

Baginsky (*Arch. f. Kinderheilkunde*, xiii.; *Epitome, Brit. Med. Journal*, 1,644, iii., 1892), **Prudden**, and others have shown that the prognosis is far better in cases due to the cocci; in 93 cases of membrane in the pharynx the bacillus was found in 68 and the cocci in 25; all of the latter class recovered, while the mortality among the former was nearly 50 per cent.

Soerensen, Prudden, Booker, and others have shown that the membranous affection seen sometimes in association with measles and scarlet fever is in the majority of cases due not to the diphtheria bacillus but to cocci. The increased knowledge of the pathology of diphtheria has had a considerable influence on treatment, which has been more than ever directed to the local lesion, though certain attempts have been made to destroy the toxins after absorption.

Behring (*Deut. med. Woch.*, April 27, 1893) has made a clinical trial of "normal diphtherial therapeutic serum" in 30 cases. The serum was injected under the skin of the front of the chest, and gentle massage applied to promote absorption. The quantity injected at the commencement of treatment was 20 c.c., and on the following day 10 c.c.; the injection was repeated on the third or fourth day; the largest quantity given in any case was 50 c.c. in four injections within five days. In some of the cases one injection sufficed. Slight local reaction and tenderness was noticed at the seat of injection, but this soon passed off without causing any inconvenience. Of 30 cases thus treated, 24, or 80 per cent., recovered.

Kossel (*ibid.*) gives fuller details of 11 of these cases; 2 died. In one of these good reasons are given for believing that septicaemia, if it did not directly determine the fatal result, at least contributed very largely to bring it about. In the other the membrane had extended into the bronchi, and the child was also suffering from tuberculosis. In 3 of the children who recovered tracheotomy had been performed; their ages were three, nine, and five years respectively, and the last case was especially severe, the patient being cyanosed, and having albuminuria. Of the 9 cases, but 2 had membrane on the tonsils; in 3 of these there was also nasal infection, and in 1 laryngeal stenosis; in the 2 cases in which the tonsils were not affected there had been attacks of suffocation which necessitated immediate tracheotomy, and one of these had in addition nasal diphtheria. It would appear, therefore, that the cases were not as a whole of a mild type, and it may, perhaps, be concluded that this line of treatment, though still only in the experimental stage, holds out considerable promise of being of no little value.

The number of suggestions that have been made for the local treatment of diphtheria has been very large; in a few instances new drugs have been recommended, but in more some special method of using a well-known drug has been described. On the whole, there is apparent a growing tendency to attach more and more importance to the mode of application of the remedy and less to the selection of the drug, provided that it be an antiseptic. Sir William Jenner, by the republication of his lectures on Diphtheria,* has reminded us that he had early recognised the value of local applications, while at the same time pointing out the dangers of the too frequent use of powerful drugs. He found that "the single efficient application of a strong solution of nitrate of silver—a scruple to a drachm of water," frequently stayed the spread of the exudative inflammation, but that, on the whole, hydrochloric acid and water in equal parts attained that object more frequently. He recommends that the brush should be passed over the surface two or three times in quick succession. Either application produces a white discolouration of the parts, which must not be confounded with spread of the diphtherial exudation. The discolouration produced by the acid passes away in about thirty-six hours, that from the nitrate of silver somewhat more quickly.

Francis H. Williams (*Amer. Journal Med. Sciences*, Nov., 1893) states that bacteriological experiments made for him by A. P. Mathews showed that solutions of perchloride of iron had no greater germicidal power against cultivations of the bacillus of diphtheria than solutions of hydrochloric acid of the same degree of acidity.

Escherich (*Wien. klin. Woch.*, vii., viii., ix., x., 1893) has published an admirable paper in which he discusses very fully the whole bearing of recent bacteriological investigations on the treatment of diphtheria, and concludes that there is much reason to hope that the antiseptic method, properly applied, promises to yield good results. He supports fully Sir William Jenner's warning as to the danger of spreading the local infection by too frequent or rough applications, and prefers the frequent use of the spray, though he does not altogether condemn resort to swabbing, which may be necessary in patients too young to understand opening the mouth. There is a certain risk of poisoning in using strong solutions of perchloride of mercury as local applications by swabbing, and weak solutions are useless as antiseptics. With the spray the quantity of solution need not be large, and it can be known

* Delivered in 1861, republished in *Lectures on Fever and Diphtheria* (London: Rivington, Percival & Co., 1893.)

precisely. A further advantage is that the solution can be brought into direct contact with the diseased part, and limited to that. In making the application, however, it must be remembered that the infection of the mucous membrane extends for some distance beyond the part which is covered by false membrane. The instrument used for spraying should be a hand-ball spray and not a steam spray, which dilutes the solution. The throat should be sprayed at first every hour, later every two or three hours, night and day. He recommends that the mouth should be washed out frequently with a mild antiseptic lotion of boric acid or thymol. He prefers a solution of perchloride of mercury (1 in 1,000) for the spray; but the point to which he attaches importance is the method of application rather than the particular antiseptic used. Escherich has resort to swabbing only when—by reason either of the youth of the patient, or of glandular enlargement, or some other cause—it is not possible to get a good view of the affected part. For swabbing he recommends small soft sponges held in sponge holders. The sponge, soaked in the antiseptic solution (perchloride of mercury), is placed firmly in contact with the affected part and rotated, the whole manipulation being carried out with great gentleness. Several sponges—from three to eight—are used at each sitting, and there should be one or two sittings each day. An objection which might be made to the method is that it is rather extravagant in the matter of sponges; but Escherich states that the sponges may be effectually disinfected by soaking in sublimate solution, and afterwards boiling in water, squeezing out, and drying.

Jacobi (*Arch. of Ped.*, April, 1893) states that children in whom intubation has been performed for laryngeal diphtheria do better if they are given perchloride of mercury both before and after. He gives a child of six years old $\frac{1}{50}$ of a grain every half hour for the first day, and every hour the next day. The solution should be very dilute (not more than 1 in 8,000 or 10,000); $\frac{1}{50}$ of a grain, in a teaspoonful of water, is what he uses in practice. For younger children the dose need not be very much reduced. An infant of six months may be given $\frac{1}{60}$ of a grain instead of $\frac{1}{50}$. Vomiting and diarrhoea are seldom produced by these doses; when they are, they are easily controlled by small doses of compound tincture of camphor. **Jacobi** (*ibid.*, Sept., 1893) condemns gargles as useless even in older children, since he accepts the opinion that, however well the patient may be able to gargle, the fluid never reaches farther than the anterior pillars of the fauces. **Braun** (*Allgem. Wien. med. Zeit.*, xxxviii., 1893; *Epitome, Brit. Med. Journal*, Oct. 21, 1893), while admitting the value of perchloride

of mercury as a local application, states that he has obtained better results with perchloride of iron applied in a manner that is apparently novel, and is capable of being extended to other drugs. He uses it in the form of an ointment with lanolin. His formula is as follows: \mathcal{R} Ferri perchloridi, $\mathfrak{z}\text{iv}$; unguentum lanolini, $\mathfrak{z}\text{i}$. It is applied on a plug of cotton wool fixed firmly on the end of a probe. The membranes are cleared away by a slight rotatory movement of the probe, and at the same time a portion of the ointment is left on the affected part. As little or none is swallowed, the remedy can be used in a concentrated form, and owing to its unctuous nature it can be effectually applied with great gentleness; the pain of the application is thus minimised, and there is little risk of producing fresh wounds of the mucous membrane on which the diphtherial organism may become grafted. The use of lanolin as the basis has the advantage that the ointment adheres for some time to the surface, and thus maintains a continuous action. After its use the affected parts of the mucous membrane remain coloured brown for some ten hours, while the healthy mucous membrane is unstained. Braun concludes, therefore, that the remedy acts only on the parts that have been actually infected. As a rule, he finds it sufficient to repeat the application twice a day; but in severe cases the membrane may be renewed so rapidly that the ointment must be applied every three or four hours. Petroleum has been strongly recommended by Flahaut (*Normandie Méd.*, iii., 1893; *Lancet*, 3,630, p. 685). It is applied with a throat-brush dipped into petroleum and shaken free of any excess of liquid. It should be applied every hour or every two hours at first, according to the severity of the case. No pain is experienced, and the main objection to the remedy is its disagreeable taste. False membrane dropped into petroleum is disintegrated and almost totally dissolved. Flahaut gives the usual enthusiastic account of the wonderful efficacy of the remedy, but it may be noted that he only began to use it when the epidemic with which he had to deal was apparently upon the wane, and that patients remained under treatment in the manner described for a fortnight on an average. Brunon (quoted *Nouv. Rem.*, Aug. 24, from *Norm. Méd.*) describes an eruption which he observed in a young man, treated with success by petroleum. It appeared on the fifth day of treatment, when the patient was convalescent. The rash was general, resembled measles, and was accompanied at the onset by some fever. On the hands and feet it was itchy. Desquamation commenced on the ninth day, but the rash persisted for ten days. The progress of convalescence was not, however, retarded.

Janicke (*Rev. Mens. des Mal. de l'Enf.*, Feb., 1893) has obtained good results with a solution of methyl-violet. An aqueous solution kills the bacillus in ten minutes in a strength of 1 in 20,000, and in one minute in a strength of 1 in 1,000. The application must be repeated as soon as the blue colouration begins to disappear—that is to say, about every three to five hours. **Fischer** (*Arch. of Ped.*, April, 1893) also speaks well of methyl-violet. He used a 10 per cent. solution, applied on cotton wool fixed to a glass rod, twice a day. Five minutes before each application the child took a teaspoonful of carbonate of soda dissolved in a tablespoonful of water.

Levy and Knopf (*Berlin. klin. Woch.*, Aug. 7; *Epitome, Brit. Med. Journal*, Sept. 2, 1893) state that in the Strassburg Clinic the number of deaths and of tracheotomies has been diminished under treatment with papayotin. This drug diminishes (*in vitro*) the toxicity of the diphtheria toxin; but as it does not prevent decomposition, they employed the following preparation: Papayotin (Gehe), 10 parts; pure liquefied carbolic acid, 5 parts; distilled water, 85 parts. The affected parts were gently painted with this every ten minutes for the first two hours, and afterwards every two hours night and day. The ice collar, inhalations, and plenty of wine were also employed according to custom. Fifty-one cases, all severe, were treated in this way; 36 recovered, of whom 1 had been tracheotomised; 15 died, of whom 5 were submitted to tracheotomy. Among the cases that recovered there were 3 instances of nasal diphtheria, 13 of marked obstruction of the air-passages, 1 of croupous pneumonia, and 2 of measles. Among the fatal cases was 1 of pneumonia, 3 of extensive bronchopneumonia, 1 of tuberculosis, and 1 of repeated hæmorrhage from the tracheotomy wound.

Much has been written, especially in America, as to the value of watery solutions of peroxide of hydrogen of various strengths as local applications in diphtheria. It will suffice to refer to the most recent observations of **F. H. Williams** (*Amer. Journal Med. Sciences*, Nov., 1893), who has given special attention to the subject. The method is ineffectual unless a solution of sufficient strength is used. If neutral, the solution must be of the strength of "fifty volumes"—that is, it must contain fifty times its volume of available oxygen. The requisite strength can be obtained by evaporating a weaker solution on a water bath in a porcelain dish. If the solution is acid its germicidal power is much greater—at least twice. The special virtue of hydrogen peroxide is that it breaks up and disintegrates the diphtherial membrane if brought into immediate

contact with it, thus not only removing a source of infection and of poisoning, but also permitting the access to the bacillus of any other germicide (in this case the hydrochloric or sulphuric acid in the solution) which it may be thought well to use. The peroxide does not attack the uninfected mucous membrane, and this selective action has the further advantage that it makes plain early the existence of the infectious process or the commencement of new centres. The affected membrane assumes a white colour, owing to the formation of a fine foam due to the liberation of oxygen gas. The remedy may be applied on a small swab or by means of the spray. If the false membrane is thick, the nozzle of a long thin syringe of stout glass may be pushed through the membrane and a few drops of the solution squeezed out.

3. Pertussis.

Ritter (*Münch. med. Woch.*, Nov. 8, 1892; *Epitome, Brit. Med. Journal*, Jan. 7, 1893), in a paper on the bacteriology of pertussis, confirms previous observers in the statement that the sputum contains lenticular masses which yield cultivations of a small diplococcus not met with under other conditions. He adds the important observation that this organism is not found in the larynx, but appears to be localised in the lower third of the trachea. This confirms the impression—it can hardly be said to be more—gained from clinical observation, that the primary lesion of pertussis is a specific tracheitis; it helps to explain also the customary failure of applications made to the nose, naso-pharynx, and larynx, as well as the benefit occasionally derived from such treatment. In a discussion which took place at the meeting of the American Pediatric Society in May (*Arch. of Ped.*, Oct., 1893), a large number of remedies was mentioned by the various speakers, but those on which most reliance appeared to be placed were belladonna, quinine, and antipyrin. To obtain the sedative action of the last-named drug, a sufficient dose must be given. Holt begins by giving to an infant of six months 6 grains a day, and increases the dose to 7 or 8 grains. [A useful rule is a grain every four hours for each year of life up to five years, but much larger doses have been given by Continental practitioners.] Umruh, who esteems antipyrin above any other sedative drug he has tried in whooping-cough (*Jahr. f. Kinderheilkunde*, xxxvi., p. 170, 1893), gives a teaspoonful of a 3 to 5 per cent. solution every three or four hours. He has never seen toxic symptoms produced. Winters, in the discussion above mentioned, said that he found codeine the most satisfactory drug; he gives a child of two years $\frac{1}{12}$ of a grain every eight hours. As to belladonna, Jacobi (*ibid.*, June, 1893) attaches much importance to the manner of

giving the drug; the first sign, he says, of "an incipient overdose" is, in the adult, dilatation of the pupils; but in the child a peculiar erythematous flush of the cheeks, which may be noticed fifteen to thirty minutes after the dose has been given. This effect he holds must be produced at every dose, as otherwise belladonna will have no effect on the pertussis. To a child of six years he gives ten drops of the tincture of belladonna (U.S.P., twice the strength of the tincture of belladonna B.P.) three times a day to begin with; and if the flushing is not produced, or if, as usually happens, it is produced after the first few doses and then ceases, he increases the dose until the flushing is noticed. The importance of diminishing the number and severity of the paroxysms is obvious, since all the complications are either determined or favoured by them; hence the value of sedative treatment, even though it does not tend to cut short the disease. **Koplik**, in a valuable paper contributed to the discussion already mentioned, brought forward evidence to prove that not only is there severe strain on the right side of the heart during the paroxysms, but that the frequent repetition of the paroxysms brings about a condition of continuous "over-strain" which is responsible for the œdema of the face (especially the eyelids), pallor, and cyanosis, commonly observed in severe cases of whooping-cough even during the intervals. As soon, therefore, as puffiness is noticed about the eyes, he recommends the addition of digitalis to any other remedy which the child may be taking. **Siebert**, in the same discussion, spoke in favour of fresh air night and day. At night the child should be covered up warmly in bed in a room with the windows wide open and the blinds drawn down; by day the windows of the room in which the child is should be kept wide open. On commencing this thorough ventilation the number of paroxysms of cough immediately diminishes. Bromoform has been used pretty extensively in the treatment of whooping-cough, but with inconstant results. By some it has been asserted that if given early enough the drug leads to the arrest of the disease, and that at a later date it diminishes the number and severity of the paroxysms. In the hands of others it has appeared to produce little or no effect. The drug was first recommended by **Stepp** and **Loewenthal**. **Cassel** (*Jahr. f. Kinderheilkunde*, xxxvi., s. 483) found that it diminished the severity of the whoops, but did not shorten the duration of the disease. He gave three drops thrice a day to a child a year old, five to older children. **Ullmann** (*ibid.*) comes to much the same conclusion. **Theodore** (*ibid.*, s. 480) obtained good results with it, combined with antipyrin, if there was fever, and extract of hyoscyamus.

Burton-Fanning (*Practitioner*, vol. 1., 1893) used it in 30 cases with results which were uniformly good. He began with doses of half a minim for infants under one year, of 1 minim up to three years, and of 2 minims up to six years; these doses may be gradually increased until they are doubled. His prescription was— \mathcal{R} bromoform, \mathfrak{m} i; compound tragacanth powder, \mathfrak{z} ss; simple syrup, \mathfrak{z} ss; water to \mathfrak{z} i. **Duncan** (*Arch. of Ped.*, Nov., 1892) also speaks well of bromoform; it has, he says, no harmful effects, shortens the duration of the attack, diminishes the vomiting from the first two or three days, and acts beneficially on complications by giving the affected organs—*e.g.*, the lungs—rest. **Schwarz** (*Jahr. f. Kinderheilkunde*, xxxvi., s. 482) reports extraordinary success by the use of insufflations of the following powder:—Charcoal, sulphur, myrobalan,* and sodic sozoiodolate equal parts. One insufflation of \mathfrak{iv} ss to \mathfrak{v} gr. was given daily. All his cases, to the number of 57, in the course of two months, got well in from three to six days, improvement being shown from the first insufflation. This was in Constantinople; but results almost equally good were got subsequently in the clinics of P. Guttman in Berlin and Monti in Vienna. **D'Heilly** (*Prat. des Mal. des Enf. dans les Hôp. de Paris*, 1893) also relies on insufflations. The powder he uses consists of salicylate of bismuth 5 parts, benzoin 5 parts, sulphate of quinine 1 part. The insufflation is repeated five times a day. The result in some cases was very satisfactory, the whooping attacks diminishing in number at once, and ceasing altogether in from nine to thirteen days. **Moizard** (*ibid.*) uses nasal insufflations of the same powder. **Marfan** (*ibid.*) also directs his medication to the nose, but prefers to apply the remedy in the form of ointment—boric acid 6 parts, menthol 5 parts, vaseline 30 parts. After cleansing the nostrils, a piece of this ointment the size of a pea is introduced into each three or four times a day. At the same time Marfan directs antipyrin to be taken after each meal, and balsams to be evaporated in the room in which the child lives.

4. Acute gastro-intestinal catarrh of infants.

Demme, of Bern (*Jahr. f. Kinderheilkunde*, xxxv., s. 257, 1893), whose death has been so great a loss, in one of his last reports, gave an account of his method of treating gastro-intestinal catarrh of the most acute type, which is often accompanied by symptoms of nervous disorder so pronounced that the

* Myrobalan is no longer in any European Pharmacopœia. It can be obtained, under the name "Coelyt," from the firm of Tromsdorff in Erfurt. It appears to be merely an astringent, and is said to be used in tanning.

diagnosis of tuberculous meningitis is sometimes made. Demme believed that the symptoms were probably due to the toxic action of ptomaines absorbed from the intestines. However this may be, cases of this type are by no means uncommon, and Demme's method of treatment was very thoroughgoing. For the cerebral symptoms he applied ice-bags to the head and nape, and wrapped the feet in warm vinegar compresses. Initial constipation he treated by hourly doses of calomel (gr. $\frac{1}{8}$ th). He washed out the stomach and intestine with a 2 per cent. solution of boric acid; the latter was only of use when the large intestine was the seat of the disease. He employed the old method of treatment by minute doses of calomel (gr. $\frac{1}{6}$ th) and opium (gr. $\frac{1}{120}$ th) in a spoonful of boiled water every two hours to five or six doses. For obstinate vomiting he gave the following: Creasote, gr. $\frac{3}{8}$ th; aqueous extract of opium, gr. $\frac{1}{20}$ th; sugar, gr. xvss; fennel water, ʒi ss; distilled water, ʒi ʒii . Of this a child two years old may have a dessertspoonful every two hours for twenty-four hours, older children double this quantity. Instead of creasote, resorcin was used with success in some cases, gr. viiss to gr. xv being given in the twenty-four hours. For profuse diarrhoea he used subnitrate or salicylate of bismuth (gr. iv to viii) with a little opium. As stimulants he employed cognac and strong tea, or, in severe collapse, the hypodermic injection of ether and camphor. In two cases of exhaustion and great diminution of the proportion of red blood-corpuscles the subcutaneous injection of physiological salt solution appeared to save life. Good sterilised milk, of great value as a prophylactic, should not be given during the acute stage. At first the child should receive only an infusion of oatmeal, barley, or rice—one to two pints, in small quantities frequently repeated during the twenty-four hours. Later, Demme gave peptonised meat, or, by preference, a meat extract made by treating meat with a weak solution of hydrochloric acid for several hours at a temperature of 122° to 140° F., filtering and skimming off the fat when cold. The pathology adopted by Demme applies only to a certain class of the cases of this type. Fischl (*Deut. med. Woch.* and *Berl. klin. Woch.*, Nov., 1893), following out researches commenced by Ebstein and others, has shown that in certain epidemics observed chiefly in foundling asylums and other institutions where many infants are gathered together, the "inflammatory diarrhoea" by which death is preceded is not the primary disorder, but a symptom of a general septic infection, the viscera, especially the lungs, containing pyogenic cocci. In such cases treatment directed to the intestine alone would probably do more harm than good.

5. Benzo-naphthol in gastro-intestinal diseases.

Brück (*Jahr. f. Kinderheilkunde*, xxxv., s. 351, 1893) employed benzo-naphthol in 38 cases of acute and subacute gastro-intestinal disorders in children. In 12 cases it produced no effect, but in the remainder its antiseptic action was quickly apparent, the stools, which were before foetid, becoming odourless; the general condition also improved, and fever diminished even in cases due to tuberculosis. As a rule also the diarrhœa diminished after a time. The drug was given in small doses five times a day, with an equal quantity of sugar. The amount given during the day was regulated according to the age of the child, as follows: Under six months, 3 to 8 grains; from seven to twelve months, 10 to 12 grains; two to three years, 15 grains; four to seven years, 20 grains; eight to fourteen years, 30 grains.

6. Chronic constipation in infants.

Emmett Holt (*Arch. of Ped.*, Sept., 1893) is of opinion that the constipation so often observed in children fed artificially is commonly due to a deficiency of fat in the food. By far the largest single ingredient of the stools of the healthy infant is fat, and this, he argues, is evidence that the food of an infant should contain more fat than is required for nutrition, the use of the excess being to keep the bowels in action. Human milk contains a larger percentage of fat than cow's milk, and when the latter is given diluted the disproportion in the percentage of milk is still further increased. By raising the percentage of fat in artificial food to 4 or 5 per cent., Holt states that constipation will be rendered a rare occurrence. Neither cane nor milk-sugar has much, if any, effect in preventing constipation, while malted foods have a certain influence, due, probably, to the laxative action of the maltose. Yale (*ibid.*) points out that gentle massage of the abdomen relieves constipation in some cases; the massage is made along the course of the large intestine from the cæcum to the sigmoid. In cases in which the constipation is associated with large hard stools I have found this form of massage, which may be very easily applied as the child lies on a pillow on the table, very effectual.

7. Chorea.

Loewenthal (*Rev. des Mal. de l'Enfance*, March, 1893) has treated chorea with considerable success, if the case came under observation early enough, with exalgin. He gave 3 grains three times (in some cases five times) a day. The mental disturbance, the difficulty in speaking, paræsthesia, and joint pains disappeared in a week in children who began to take the drug within two or three days of the onset of the disorder. The objection to the drug is that it may produce noises in the ear, a condition resembling

inebriety, visual disturbances, nausea and vomiting, headache, cyanosis, jaundice, and increase in the pains ; these symptoms disappear when the drug is stopped, and do not reappear when it is resumed. **Dana** (*Epitome, Brit. Med. Journal*, vol. ii., 1893, 270) considers that in ordinary chorea exalgin has a specific action. He begins with 2 grains thrice a day, and rises to as much as 3 grains five times a day. Acute anæmia and cyanosis are the unpleasant symptoms he has noticed, and during the treatment he gives iron after meals. **Barrs** (*Lancet*, May 20, 1893) confirms the opinion of **Bastian**, that in severe cases of chorea in which life appears to be threatened owing to exhaustion and want of sleep, chloral pushed to the point of producing prolonged sleep is a most valuable remedy. His cases appear to show that the use of the remedy is not contra-indicated by the presence of fever, as Bastian supposed.

8. Phosphorus in rickets.

The use of phosphorus in rickets is no novelty, but it has never become general ; the persistent advocacy of **Kassowitz** has, however, led to its being employed more extensively during recent years. Phosphorus, he says, is the "iron of rickety children." It is excessively difficult to reach a trustworthy conclusion as to the action of any drug in rickets, but after using the drug in a good many cases I have formed the opinion that it is of service in the acute stage of rickets in fat children who suffer much pain on handling and perspire freely. It seems to relieve the tenderness, to diminish the sweating, and to give the child good sleep. The phosphorus is given most commonly by Kassowitz in solution in cod-liver oil, 1 in 10,000. This is prepared by first of all making a solution of 2 in 1,000 in almond oil, and five parts of this and 95 of cod-liver oil make the solution dispensed. A teaspoonful is given daily. It may be flavoured with saccharin (5 per cent.) and oil of lemons. Another preparation used is a solution of 1 part of phosphorus in 250 parts of lipanin and an equal proportion of olive oil ; the dose of this is 10 drops. **Louis Guinon** (*Rev. des Mal. de l'Enfance*, Nov., 1893), who has used the treatment in Grancher's clinic, finds that an improvement may often be observed at the end of a fortnight : the infant is more lively, coughs less, digests its food better, and sleeps better ; after three or four weeks it shows a disposition to sit up or, if an older child, to walk ; in about two months the teeth begin to show. Diminution in the size of the bony enlargements was noticed in a few cases, but not constantly. **Masters** states (*Jahr. f. Kinderheilkunde*, xxxiv., s. 68) that at the Kieff Hospital, where phosphorus has been extensively used, it is found to be best borne when given in

almond oil. The prescription I have used is the following:—Phosphorus, 1 grain; absolute alcohol, 350 minims; spirits of peppermint, 10 minims; glycerine, 2 fl. ounces. The dose of this is from 3 to 6 drops on a lump of sugar.*

9. Diuretin in dropsy.

Demme, in a report on the Jenner Children's Hospital at Bern (*Jahr. f. Kinderheilkunde*, xxxv., s. 350, 1893), gave the result of the use of this drug in 11 cases of dropsy in children; 4 were due to scarlatinal nephritis, 3 to mitral insufficiency, and 2 to chronic peritonitis and pleurisy. The ages of the children ranged from two to ten years. The quantity given daily to children from two to five years old was 8 to 23 grains; to children of six to ten years, 23 to 46 grains. The drug was given dissolved in water with a little brandy, and a dose was administered every two hours. Children under one year do not bear the drug well, as it is apt to cause derangement of the stomach and intestines. In scarlatinal dropsy the use of the drug should not be commenced until the acute stage is over, nor until the daily quantity of urine passed has risen to from 10 to 14 fl. ounces. In one such case the quantity of urine rose in a week from 10 fl. ounces to 36 fl. ounces, while the sp. gr. sank from 1,022 to 1,008. In no case was evidence noticed of any injurious action on the renal epithelium; but one child died while under treatment with the drug. In one case of cardiac dropsy, in which digitalis had ceased to produce any effect, the quantity of urine rose during the administration of diuretin from 7 fl. ounces to from 38 to 52 fl. ounces. The drug could be continued for several weeks without any evidence of a cumulative action, or of any weakening of its effect.

* Mr. Coade, dispenser to the Shadwell Children's Hospital, who has worked out the above in practice, informs me that the glycerine should be heated first in a flask to drive off any water it may contain; the phosphorus is then dissolved in the alcohol by the aid of heat, a very troublesome process; the glycerine is added, and the whole heated together again for a short time. The resulting mixture is stable, and though it has a very distinct odour and taste of phosphorus, it is readily taken by children on sugar.

ANÆSTHETICS.

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THE GENERAL USE OF ANÆSTHETICS.

For all operations involving the incision of skin or mucous membrane and the subjacent structures a general anæsthetic is necessary. When the operation is very brief and involves less sensitive parts, local anæsthetics are sometimes employed. Of general anæsthetics, nitrous oxide gas is employed for short operations, the narcosis in this case persisting for from one-third to half a minute. For prolonged operations, nitrous oxide gas followed by ether; ether; mixtures of ether and chloroform (*e.g.*, the A.C.E.) or chloroform may be used.

Choice of anæsthetic.

This is influenced by (1) the condition of the patient; (2) the exigencies of the operation.

(1) *The condition of the patient.*

Ether is contra-indicated when any acute affection of the respiratory tract is present, such as laryngitis, bronchitis, pneumonia, etc. Chronic respiratory disease, when associated with much fluid in the bronchi, empyema which has opened into the lung, render ether an undesirable agent. Children below three or four years of age should not, as a rule, have ether given them for long operations, but can take it for brief ones. It is liable to set up catarrh in infants if given too freely.

Chloroform is contra-indicated for persons with fatty heart; in the anæmic, in alcoholics, in cases in which the heart is greatly displaced, especially when the displacement is due to pyothorax; in conditions when the respiration is greatly interfered with, as in growths partly occluding the larynx; in extreme emphysema with rigid thorax. When cardiac syncope, however produced, is a symptom of the disease, its presence renders chloroform an undesirable anæsthetic.

Nitrous oxide gas may be used for practically all persons.

The anæmic, persons suffering from venous congestion affecting their lungs and distending the right heart, persons subject to respiratory spasm, require especial care, but it seldom happens that a study of an individual results in an adverse judgment to the use of this agent. Its range of safe and profitable employment is certainly far wider than is commonly recognised.

(2) *Exigencies of operations.*

Duration.—When very brief, *e.g.*, less than a minute, nitrous oxide should be used. This gas, when combined with a very small quantity of ether, will give an anæsthesia without after-effects lasting to two, two and a half, or even three minutes. More prolonged operations require ether (either simply or in succession to nitrous oxide gas), the A.C.E. mixture, or chloroform. Bromide of ethyl will produce an anæsthesia lasting five minutes, but should not be employed for a longer time (Von Baracz). Turnbull, however, gives forty minutes as the limit of safety.*

Pental (amylene) has been suggested† as an alternative for short operations (less than five minutes) when nitrous oxide gas cannot be employed.

Posture.—When chloroform or any mixture containing it is used, the recumbent position, with all constricting clothing undone, is absolutely necessary. Nitrous oxide or ether may be administered to persons sitting up in a chair, provided their clothing is loosened. Both bromide of ethyl and pental are best given in the recumbent posture, although they have been used by Holländer and others when the patient sat in a dental chair.

Shock.—When severe shock is present as from railway injury, or is liable to ensue from the nature of the operation, ether alone, or in succession to nitrous oxide gas, should be used. If this cannot be done for other reasons (*see* p. 204) the patient may be narcotised by this plan and kept anæsthetic by the after-use of the A.C.E. mixture or chloroform. Hence it is usually best to give ether in emergency operations after severe injuries; for herniotomy (strangulation), operations about the rectum, vagina, genito-urinary tract; abdominal sections for the removal of fibroid tumours, etc.

Operations about the mouth, throat, and nasopharynx, *e.g.*, excision of the tongue, removal of maxilla or mandible, tonsillotomy, removal of post-nasal growths, for deviated nasal septum, ablation of turbinate bodies, and such minor operations as excision of cysts, etc., will, when the actual cautery is

* “Artificial Anæsthesia,” 3rd Edition.

† See “Constant on Pental,” *Journal of Brit. Dent. Assoc.*, May, 1892; also leading article in same journal.

required, indicate the use of chloroform. Recently Dundas Grant and others have eulogised nitrous oxide gas for tonsillotomy and removal of post-nasal growths, and this method has been used by me for many years with success. Unless the patients are allowed to feel the later steps of the operation, or the case is unusually simple, nitrous oxide gas is not sufficient when both the tonsils and adenoid growths are to be dealt with, and for these cases that gas followed by ether answers admirably. When an operation about this region is likely to be prolonged over a few minutes it is necessary to maintain anæsthesia by pumping chloroform vapour (*see* p. 208) through a catheter placed either in the mouth or passed through the nostril into the naso-pharynx. This can be done in sequence to the use of nitrous oxide gas followed by ether. Thus the patient first takes nitrous oxide, then ether, and finally chloroform, the last agent being kept on as long as the operation is pursued. Of course, chloroform can be used from the beginning if a gas or ether inhaler is not at hand. The A.C.E. mixture also answers well for such cases even when a cautery has to be used. It is alleged that ether, by producing more bleeding, renders operations about this region more dangerous. Upon the other hand, the narcosis under this agent is, as a rule, for throat operations less deep than when chloroform is employed, and so the patient is less liable to have blood entering the trachea.

Operations upon the abdomen.—Although in the majority of cases ether gives most satisfactory results, yet it happens sometimes that the respiratory movements of the abdominal parietes become so troublesome under ether as to make the operation difficult or even impossible. The A.C.E. mixture may in such cases be successfully employed.

Operations on the head and neck.—In brain surgery chloroform is preferred, as the vascularity induced by ether renders the operation more difficult and decidedly more dangerous. Deep dissection in the triangles of the neck often demand the use of chloroform, both on account of the troublesome movements in quickened respiration and the increased venous and arterial bleeding when ether is given.

Operations on the thorax can, as a rule, be conducted under ether, unless there is some pulmonary condition present contra-indicative to its use.

Administration of anæsthetics.*

* This is described at some length in the "Year-Book of Treatment," 1893, article "Anæsthetics." Reference may also be had to the author's "Anæsthetics," 2nd Edition, pp. 38, 73, 109, etc.

Nitrous oxide.

The apparatus* recommended is figured below (Fig. 1).

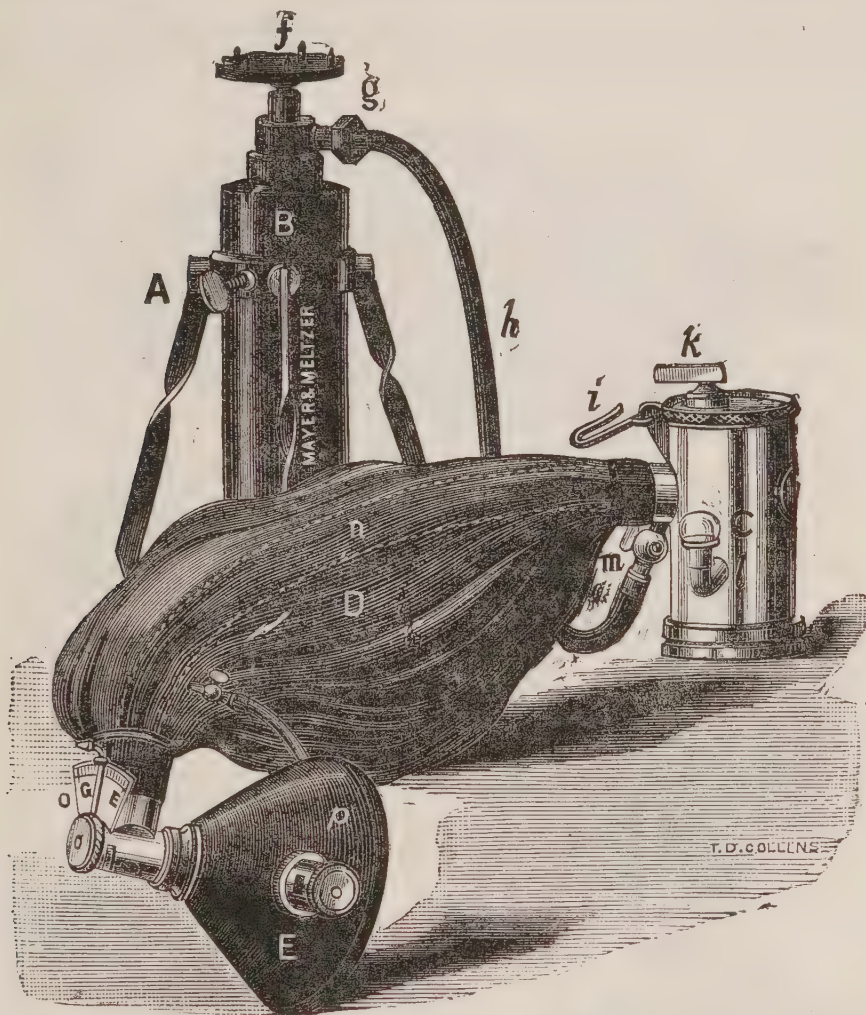


Fig. 1.—APPARATUS FOR THE ADMINISTRATION OF NITROUS OXIDE. A, Tripod; B, Steel N_2O bottle containing 50 gllns.; C, Ether Inhaler; D, Cattlin Bag; E, Clover Face-piece; f, foot-piece for turning on or off the N_2O supply; g and h, tube and connection between B and D; m, stop-cock guarding entry to D; i, hook for attaching C to administrator's coat; k, valve shutting off ether supply from D; n, central tube traversing D and allowing ether access to E; o, dial-plate on which is seen indicator half-way between G (N_2O) and E (ether); p, expiration valve; on E is also seen the small tube and stop-cock for blowing up the cushion rim to face-piece.

Ether.*

Is best given in succession to nitrous oxide. The patient having inhaled N_2O for some ten or twelve breaths, the stop-cock (k) is turned. The indicator is now turned gradually from the position marked g to that indicated by E on the dial-plate (o). When given alone, the apparatus* shown in Fig. 2 is best

* See footnote, p. 204.

employed. The patient at first breathes air, the indicator pointing to 0, then it is gradually turned through 1, 2, 3 to F. When complete unconsciousness has supervened the indicator is turned back to 2, and kept there during the operation. From time to

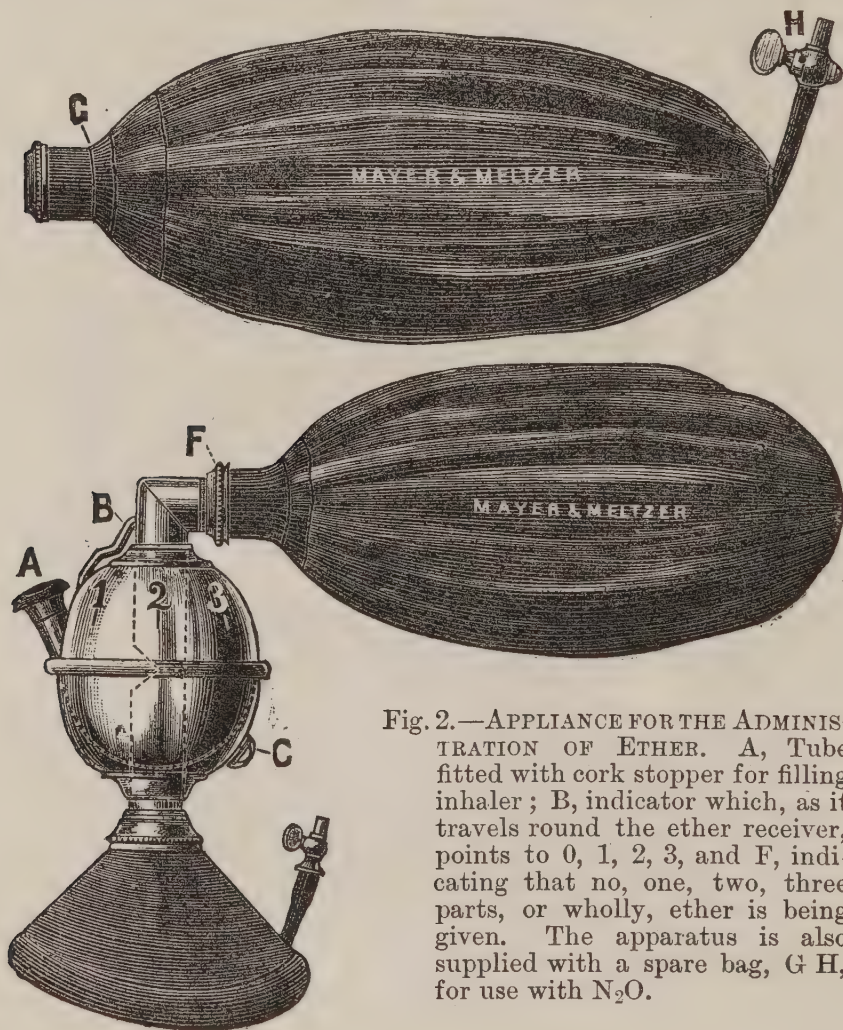


Fig. 2.—APPLIANCE FOR THE ADMINISTRATION OF ETHER. A, Tube fitted with cork stopper for filling inhaler; B, indicator which, as it travels round the ether receiver, points to 0, 1, 2, 3, and F, indicating that no, one, two, three parts, or wholly, ether is being given. The apparatus is also supplied with a spare bag, G H, for use with N_2O .

time the apparatus is lifted from the patient's face to admit air. In using **Allis's Inhaler** * (Fig. 3) ether is poured upon the flannel stretched across the metal cage. Too strong a vapour should be avoided at first.

Difficulties, dangers, and their treatment.

Provided constant attention is given to the patient, and cyanosis is watched for and relieved by admission of air, the immediate dangers arising from ether skilfully administered are practically *nil*. Remote dangers, such as nephritis, bronchitis, pneumonia, are, when due to the ether, the result of faulty

* See footnote, p. 204.

administration, too much of the anæsthetic having been given. In this connection it may be said that whatever quantity of ether is required to produce anæsthesia, a very small percentage of this will suffice to prolong unconsciousness until the operation is finished. Rare cases have been recorded (*see Lancet*, Sept. 30, 1893) of heart failure under ether, but in all such fatalities the patient has been in an exhausted state from disease or shock.

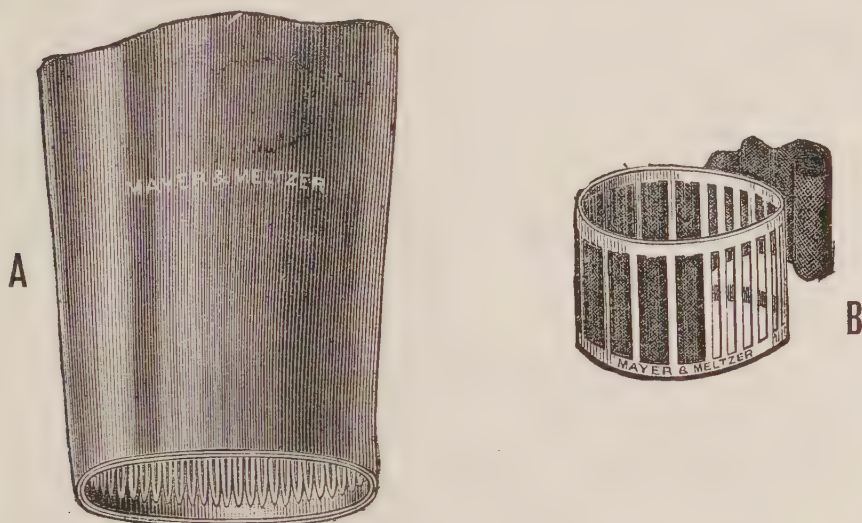


Fig. 3.—ALLIS'S INHALER. A, The inhaler complete, resting on its top end ; B, the metal case contained in the leather case, across which the bandage is laced.

Respiratory spasm, due to giving too concentrated a vapour, usually abates when the ether is withdrawn. If air is persistently prevented from entering the lungs through this or other cause, the larynx or trachea must be opened.

Chloroform.*

No detailed account of the administration is needful, but reference may be made to recent improvements in apparatus employed in chloroforming. In Figs. 4 and 5 is shown the improved form of Junker's inhaler (the tubes are omitted in the diagram), as made by Messrs. Krohne and Sesemann. The bottle (Fig. 4) is supplied with chloroform (3iv) through the funnel, and can safely be held in any position. The flannel mask (Fig. 5) allows fresh air admixture, can be cleansed after use, and does not hide the face, while it permits of the force of expiration being felt by the hand holding it. The actual amount of chloroform blown over may be controlled by the force with which the hand-bellows are compressed. For

operations where the mouth has to be uncovered when the patient is "under," the flannel mask is replaced by a metal tube, which is held in the mouth, or a catheter passed through the nose into the naso-pharynx. Hewitt has introduced a combined oval tube and gag.*

Difficulties and dangers.

The *Lancet* Chloroform Commission (*Lancet*, vols. i. and ii., p. 629, *et seq.*, 1893) in summing up the conclusions arrived at

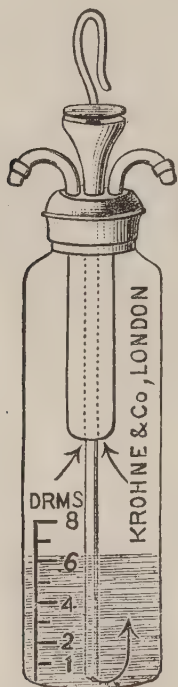


Fig. 4.—JUNKER'S INHALER. Bottle adapted with funnel inlet and safety arrangement preventing entrance of liquid chloroform into the tubes.



Fig. 5.—FLANNEL MASK USED WITH IMPROVED JUNKER'S INHALER.

after the study of the deaths and dangerous cases recorded between 1849 and 1892, state that many deaths occur from circulatory failure, some from paralysis of respiration, and many through reflex cardiac inhibition, the patient being insufficiently protected from shock through incomplete anæsthesia. These views are at variance with those expressed by the members of the second Hyderabad Chloroform Commission.

Hare and Thornton (*Lancet*, Oct. 21, 1893, p. 996) find chloroform is a powerful and constant arterial depressant, mainly due to vaso-motorial depression, and is at the same time a powerful depressant and paralyzant to the respiratory centre. In healthy lower animals they find respiration fails always before the heart, but they

* See Hewitt's "Anæsthetics," p. 199.

add, "We believe that true fatty heart, *plus* ventricular engorgement, *plus* possible valvular disease, and, finally, *plus* extreme vasomotor relaxation, may result, in frightened people, in death." While believing it improbable that reflex cardiac inhibition occurs in healthy persons, they admit its possibility if "heart disease or some other condition makes the individual unable to withstand any shock whatever." They add "that true depression of the heart-muscle may take place under chloroform seems to us to be most undoubted." They traverse the view promulgated by the Hyderabad Commission that circulatory depression from vagal irritation is protective, and believe atropine delays the chloroform depression of the circulation.

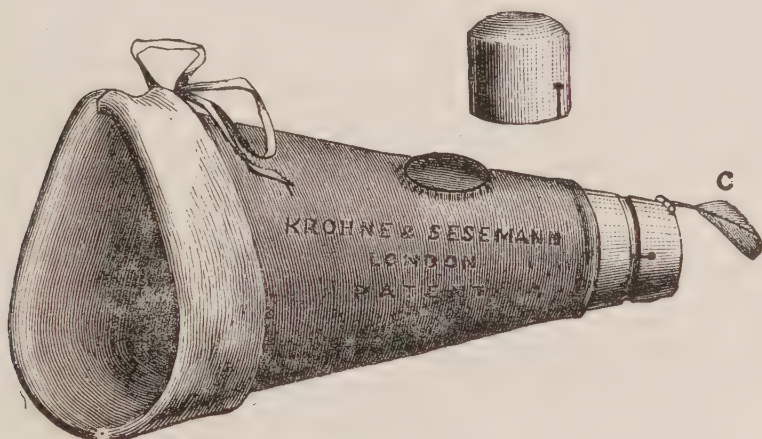


Fig. 6.—KROHNE'S CONE WITH FEATHER RESPIRATION REGISTER (C).

In cases of heart failure **Iliffe** has adopted the plan of pushing the hand beneath the xyphoid cartilage and compressing the heart, a manœuvre which **Koenig** (*Berlin. klin. Woch.*, March 21, 1892) has also found satisfactory. **Maas** prefers to press rhythmically the præcordium thirty times a minute, at the same time opening the mouth and dragging forward the epiglottis. **Prof. Wood** speaks highly of hypodermic injections of strychnine, and the performance of *forced artificial respiration*, a bellows being employed. The use of oxygen has been revived by **Foy**, but does not seem of much value in chloroform toxæmia. In every case in which artificial respiration is performed *expiration* should precede inspiration in order to clear away the chloroform in the lungs and prevent reabsorption.

The **A.C.E. mixture** should be freshly prepared and be composed of 1 volume absolute alcohol (sp. gr. .795), 2 volumes of chloroform (sp. gr. 1.498), 3 volumes of pure ether (sp. gr.

·720).* It may be given by the "open method," but is best administered from a cone (Fig. 6). More air admixture is required than in the case of ether, somewhat less than when chloroform is used. Failure of respiration is the most usual form of complication, and to avoid this the thoracic movements should never be lost sight of. This mixture is sometimes used to get the patient unconscious before ether is administered—i.e., instead of nitrous oxide gas—and answers well. In children and in parturition it is an excellent anæsthetic.

Pental may be given from an ether inhaler—Allis's (Fig. 3), Ormsby's or Clover's smaller apparatus (Fig. 2)† being probably best for the purpose. It can be given by dropping it on a flannel mask, but a sufficient vapour strength must be used to attain full anæsthesia in three minutes. The anæsthesia persists for from half to one minute after the mask is taken from the face, and if the operation is not completed a fresh dose of pental must be given. The patient, although insensient, opens his mouth, etc., when ordered to do so. Pental vapour, when mixed with air, explodes on being heated. **Chalal** (*Internat. klin. Rundschau*, No. 9, Vienna) says: "Pental, besides giving only superficial anæsthesia, takes longer in its action than chloroform, and exerts a highly prejudicial effect upon the heart and circulation"—an opinion which other careful observers appear to share.‡

Bromide of ethyl is given from an Allis's or Ormsby's inhaler, with total exclusion of air. Unconsciousness is shown by palatine stertor and loss of conjunctival reflex. Consciousness speedily returns. Nausea and headache, with giddiness, occasionally follow its use. **Silk** § has used it with a certain amount of success in dental surgery. Deaths from heart failure have followed its employment, and the consensus of opinion seems to be that it is a dangerous drug, although it has some warm adherents.||

Local anæsthesia.

Cocaine, although not without many grave objections, is often a convenient local anæsthetic. In ophthalmic surgery it is most conveniently used as an instillation. Painting the skin or mucous membranes is probably valueless. When injecting cocaine

* See Dudley Buxton's "Anæsthetics," 2nd edition, p. 143, for rationale of this and other mixtures.

† Höllander, of Halle, uses a Junker's inhaler, and finds 10 to 12 c.cm. sufficient in dental surgery.

‡ See "Annual of Univ. Med. Sciences," article "Pental," vol. iii., p. 12.

§ "Bromide of Ethyl in Dental Practice," 1891, Trans. Odont. Society.

|| Gleich in *Deutsche Medicinal Zeitung* (Berlin), Aug., 1892; Baracz in *Zeitschrift f. Therapie*, July 15, 1892.

solution care must be taken that the solution is freshly prepared, as on standing a deleterious scum forms upon it. Injections into a vein are most dangerous. Some ten minutes or so should elapse before operating after injecting cocaine. The average dose is $\frac{1}{2}$ grain, but toxic symptoms have followed even smaller doses. **Germain Sée**, from his experience, states: "Cocaine is an untrustworthy and dangerous drug." Death from heart failure follows cocaine, and among untoward symptoms may be mentioned paresis, coma, convulsions, acute mania (**Krauss**), paralysis of respiratory muscles. The cocaine habitude should render the use strictly confined to the hands of medical men themselves, and even by them it should be employed with caution.

Chloride of ethyl is kept in glass tubes. When in use the glass is held in the hand and the point snapped off. The liquid falls on the part to be chilled into anæsthesia, and a painless area is thus produced which permits of brief operations being performed.

Chloride of methyl is another useful local anæsthetic, employed in much the same way as the above. It is kept in a special apparatus.

Tropococaine (tropsin), a 3 per cent. solution in $\frac{3}{5}$ per cent. of chloride of sodium, is employed instead of cocaine. It is asserted (**Chadbourn**) to be less poisonous, more persistent, productive of less hyperæmia and mydriasis than cocaine. **Bokenham** has employed it, and summarises his experience in the Ophthalmological Society's Transactions.

GENERAL SURGERY.

BY STANLEY BOYD, B.S., F.R.C.S.,

Surgeon to the Charing Cross Hospital and to the Paddington Green Hospital for Children.

I. New methods of operating, etc.

An instrument for delicate dissections.—W. W. Cheyne (*Brit. Med. Journal*, 1893, ii., 123) figures this instrument, one end of which is really a fine probe; the other, though small, is flattened out, curved slightly, and blunt. Cheyne has found it of great value in enucleating glands, in separating important structures, in exposing small nerves, isolating varicose veins, etc. Down Bros. make also, for Jordan Lloyd, solid steel scalpels with handles terminating in straight or curved dissectors or a scoop. Most surgeons would probably find them very uncomfortable in the hand.

The crossed suture.—Fowler (“*Annals of Surgery*,” May, 1892).—This is said to be specially adapted for deep sutures which it is desired ultimately to remove; but probably every crossing would render the removal of a stitch of rigid material more difficult. On the other hand, this suture would probably bring about a fairly perfect approximation of the sides of deep wounds. The application of the stitch may be best illustrated in a laparotomy wound. The thread is passed first through the peritoneal edges; its ends are then crossed and passed through the muscles and their sheaths; after which they are again crossed, passed through the skin from within out (thus avoiding the carriage of infection from the surface), drawn tight, and tied. It will be seen that this stitch might be used where there are no distinct layers, as in perineorrhaphy.

Infusion of normal saline solution.—Mayo Robson (“*Clin. Soc. Trans.*,” March 24, 1893) described a case of enucleation of large fibro-myoma uteri, and another of amputation at hip in which death seemed imminent, though little blood had been lost. Both recovered after infusion of normal saline. Robson now always takes to capital operations a packet of salt to make 4 pints of solution and a Higginson’s syringe connected with a glass pipette by a rubber tube. On one occasion he used 5 pints, sometimes only 3. A patient should be watched after infusion, and, should

the pulse fail, more fluid be run in; but this is rarely necessary. Remfry, Bidwell, Battle, and Burghard spoke in favour of the treatment, and there can be no doubt but that it is, deservedly, growing in favour. The quantity infused varies from a pint upwards, the effect on the pulse being watched. Thus in a young woman placed on the table, with pulse 150, for the opening of a pelvic abscess, pulse reached 170 during operation; markedly increased fulness and fall to 140 after infusion of 2 pints seemed to the writer satisfactory; the patient had no relapse.

Clinical determination of coagulability of blood, with observations on a case of hæmophilia.—**A. E. Wright** (*Brit. Med. Journal*, 1893, ii., 223) (see "Year-Book," 1893, p. 206).—The method consists in filling six or more capillary tubes of about equal calibre with blood from the finger, and then blowing out their contents on to filter-paper—the last 2 minutes after filling, the next after $2\frac{1}{4}$, $2\frac{1}{2}$, and so on. The results are noted under "liquid," "clotting," and "clotted." In health clotting is thus found to occur in $2\frac{1}{2}$ to 5 or, rarely, 6 seconds. In a boy suffering from marked hæmophilia, Wright found that clotting took 10 seconds, and the relative numbers of the different forms of leucocyte were not usual. The administration of 15 grs. of chloride of calcium twice daily reduced the coagulation time to $5\frac{1}{4}$ — $5\frac{1}{2}$ minutes on the first and second days, but on the fourth it rose to over an hour. This is the result of an excessive dose, as Wright showed by experiments on himself and others. The greatest acceleration of coagulation is obtained with one or two 15-gr. doses; the effect is at its height in 24 hours, may appear in 3 hours, and last until the third day. Wright has adduced some clinical evidence of the value of this remedy in spontaneous hæmorrhages; it would be worth while administering before operation a dose or two to patients in whom loss of blood is either very undesirable or likely to be excessive. **Mayo Robson** (*Brit. Med. Journal*, 1893, i., 787) says that he has found the administration of chloride of calcium useful previous to operation, and in uterine and other hæmorrhages.

Intestinal anastomosis.—Many new tubes and rings of de calcified bone and other materials have been produced—*e.g.*, those of **Murphy** (*Med. Record*, Dec. 10, 1892), which require diagrams to explain their form and use. Accounts of **Mayo Robson's** bone bobbins have now appeared (*Brit. Med. Journal*, 1893, i., 688), and necessitate amplification of the short statement given in the "Year-Book," 1893, p. 204. The bone bobbin is $\frac{7}{8}$ inch long, has a canal $\frac{5}{8}$ inch wide, a wall $\frac{1}{8}$ inch thick, and a projecting rim $\frac{1}{8}$ inch deep at each end, like those on a reel. The pieces of bowel

between which union is to be effected are drawn out, squeezed empty, and surrounded at their bases by drainage tubes, knotted once and clamped. These are laid on large guards, which also cover the abdominal wound. Nibbed forceps are applied to each viscus to mark the incision. Half an inch from this line, and on the far side of it, a Cushing's rectangular silk suture is inserted, each stitch taking up $\frac{1}{3}$ inch of serous and muscular coats. Then the incision is made, and the edges on the far side are united by continuous catgut or stained silk suture passed through all the coats. The bobbin is then inserted, and the marginal stitch carried round on the near side and finished by tying the two ends together drawn tight round the tube. The outer suture is similarly completed $\frac{1}{2}$ inch out, its ends drawn upon and tied. Two cases—ileo-sigmoidostomy and gastro-enterostomy—illustrate the method.

Experimental union of ureter after transverse division.—**Weller van Hook** (*Journal Am. Med. Ass.*, 1893, i., 225) cut out $\frac{1}{2}$ inch of a dog's ureter 1 inch from the bladder, closed lower end by ligature, and $\frac{1}{8}$ inch below it made a longitudinal slit $\frac{3}{8}$ inch long; enlarged upper end slightly with scissors, and passed a stitch through it, through the lateral slit in lower end, down its lumen and through its wall. Traction on stitch drew upper end through slit in lower, and two fine stitches were then passed at each end of slit; finally an omental graft was applied round all. Recovery without symptoms. On the 26th day, ureter patent and of normal calibre; no adhesions except where omentum was sewn round junction.

Removal of glands in cancer.—Most surgeons probably now remove the axillary glands in all cases of cancer of the breast; but the principle is by no means so regularly applied in cancer of other regions. Even in the axilla a lack of system is sometimes apparent. **Weir** (*Med. Record*, Dec. 31, 1892) recommends that the clavi-pectoral triangle should always be examined, in clearing the axilla, by separating the two pectorals with the finger, and perhaps by using a finger under the pectoralis minor; then, by raising the pectoralis major, a little fat containing a few glands can be seen on the costo-coracoid membrane, and removed with fingers or blunt instruments. The writer's experience would support this recommendation; the pectoralis major should be relaxed by holding the arm vertical and rotating in; a broad retractor can then raise it well.

Rupprecht (*Ct. f. Ch.*, No. 16, 1893) insists that the inguinal glands should be removed in all cancers of navel, penis, vulva, anus, and lower extremity, unless contra-indicated by debility. In median cases he operates on both sides by cuts from pubic

to iliac spine, and from this down along the femoral vessels. The triangular mass of fat and glands is then removed with a blunt instrument, the saphenous vein being divided. It is often necessary to remove glands after division of the falciform process.

Antisepsis and asepsis.—Some very interesting and practically important papers bearing on these subjects have been published. **Büdinger**, in papers on the virulence of microbes found in wounds healing by first intention (*Wien. kl. Woch.*, Nos. 22--25, 1892), states his belief, and his experimental reasons for it, that we cannot talk of wounds free from microbes. No method, he says, has yet been devised which will prevent germs from falling into wounds, or kill or prevent them from developing when there. The germs commonly found in wounds healing *per primam* are staphylococcus albus, aureus, or citreus, and they are virulent, as he showed by inoculations on his own arm. He thinks that "aseptic traumatic fever" is due to the action of these germs.

Schimmelbusch (*Ct. f. Ch.*, 1893, No. 30) spoke at the Congress of German Surgeons "on the disinfection of septic wounds." He said that although we have a large number of antiseptic agents, experiments to test their efficacy have always been made on infected, dead culture media—not upon wounds. Yet experiments on wounds are easily made, for it is necessary only to inflict a wound, inoculate it with the chosen virus, irrigate or scrub it with the antiseptic to be tested, and see the result. Schimmelbusch made a series of such experiments upon rabbits and mice, using with the former a streptococcus very fatal to it, and with the latter the anthrax bacillus. Even when the antiseptic was applied *immediately* after the virus the animals died; all ordinary antiseptics were tried, also caustic potash, nitric and acetic acids. Again, Schimmelbusch inoculated tails of mice near tip, and then amputated the tails 2 or 3 cm. higher; the mice died if more than ten minutes elapsed between the inoculation and amputation. He believes, therefore, that organisms reaching the surface of a wound almost immediately penetrate the tissues, and are thus withdrawn from the influence of antiseptics.

The deduction from both the foregoing papers would be that antiseptics applied to wounds are of little or no value as germicides; so, as they are irritant and poisonous, they should not be brought into contact with wounds. Surgeons will best serve their patients by striving to render infection of a wound impossible—*i.e.*, by endeavouring to work aseptically; and on the Continent, roughly speaking, all efforts tend this way. In England aseptic methods have, apparently, done little towards displacing antiseptic; yet it is certain that everyone applies antiseptics to raw surfaces far

less freely now than formerly, and it is possible that such small quantities of antiseptic solutions as are applied are not beneficial, as Schimmelbusch's results would seem to prove, but, rather, harmful.

The dominant English view upon this all-important question may be gathered from a lecture by Sir J. Lister on the Antiseptic Management of Wounds (*Brit. Med. Journal*, 1893, i., 161, *et seq.*). His objections to the aseptic plan of working are: (1) that he has seen it working in very able hands with very unsatisfactory results; and (2) that whilst it may be possible in hospitals to carry out satisfactorily the details of the system, it breaks down in private. If Lister has seen the best that can be done with asepsis, his first objection should be fatal to its adoption by us; but it is hard to believe that those very surgeons who adopted antiseptic treatment earlier and much more enthusiastically than the great body of English surgeons did, should have abandoned it for another—the aseptic—method, yielding inferior results. Still, many may not have obtained the best results with antiseptics, asepsis having come into favour largely on account of disappointments connected with their too free use of the spray, irrigator, etc. It must be remembered also that on the Continent abdominal surgery has not been abandoned to specialists: most surgeons do a large number of laparotomies, and antiseptics did not win its spurs in the peritoneal cavity. With regard to the difficulties of practising asepsis, a pot or two kept boiling on the fire or gas-stove will get over most. Lister himself gives the following directions for “operations without antiseptics”: Boil sponges, silk, and instruments; wash sponges during operation in boiled water, though unboiled would probably not cause mischief; place boiled towels about the wound; cleanse hands and skin with soap, water, and brush. Dry dress with cotton wool or old linen, preferably boiled before use. To these directions, which certainly are not very complicated, the writer would add—do not drain, if it can be avoided; and re-place a soiled instrument for a minute or two in boiling water.

Still, Lister is clearly right in saying that, *cæteris paribus*, simplicity is most important. He states that, operating and dressing as he now does, he has not for a long time had any failure from sepsis in wounds situate a fair distance from mouth, anus, etc.: *i.e.*, *quâ* antiseptics, the results have been perfect; and the method pursued could not well be simpler or more easy to carry out. Finding that normal serum is not a good soil, and that a few bacteria will be destroyed by leucocytes, Lister has given up spray and irrigation, which were directed against aërial germs: “an

operation may now be performed with the simplicity of former years." Inoculation of the wound by sponges, instruments, hands of the surgeon, or skin of the patient is *the* thing to avoid ; and carbolic acid is the best agent to effect their purification, for it has now been shown that Koch was misled in assigning a greater germicidal action to corrosive sublimate ; moreover, carbolic acid has a powerful affinity for epidermis, and mingles with fatty materials, while corrosive sublimate necessitates the use of soap and water, turpentine, and ether before it can act upon the skin. On the table Lister does not even use soap and water ; he merely scrubs the area with 1 in 20, a few minutes' action of which is sufficient. Hands are similarly cleansed. Instruments must be *carefully* washed before they are put away ; a few minutes in 1 in 20 will then sterilise. Sponges should be washed in soap and water, then in soda solution, then in water ; after drying, they are put in 1 in 20 till required for use. During an operation they are washed in 1 in 40. At end of operation the wound is washed with 1 in 40, as one cannot be certain that the assistants have done as they should have. (Schimmelbusch's experiments go to show that this is valueless.)

Now, admitting the results of the two methods to be equal—and those of asepsis are certainly not superior to those obtained by Lister—and omitting the final wash with 1 in 40, the choice between them narrows itself to the selection of that which is most easily carried out. Is it more easy to sterilise by boiling, steaming, and heating or by 1 in 20 ? The decision must surely be in favour of the latter, as above used. Indeed, after reading Lister's lecture, we can understand the feelings of an assistant from one of the large German clinics, fresh from the details of asepsis, who expressed himself as much disappointed with Lister—he was so dirty ! Again, if drainage is used, and it frequently cannot be avoided, an antiseptic dressing seems to possess a clear advantage over one merely sterilised. Lister always uses the double cyanide gauze ; it is kept just damp with 1 in 20, rolled up in a piece of jaconet, and is very easily carried about.

In support of Lister's and Crookshank's contentions against the value of corrosive sublimate, we may note that Welch and Abbott, of Johns Hopkins University, are quoted (*Journ. Am. Med. Assoc.*, 1893) as stating that, if used strong enough, to destroy certainly staphylococcus pyogenes aureus, which varies much in resisting power, and to remain efficient after precipitating the albumen present (quantity always unknown), it causes necrosis. They have obtained more uniformly good results with sterilised water than with sublimate lotion.

Plastic surgery.—Transplantation of tissues, especially of skin, for the purpose of filling up defects, continues to occupy a great deal of attention. **Urban** (*D. Zeit. f. Ch.*, bd. xxxiv., p. 187) states that 350 cases had been treated at Leipzig by Thiersch's method, the best results having been obtained in lupus and chronic ulcers of the leg. The treatment of lupus by excision and immediate grafting was recently exhibited as new at a London Society. It is probably the best method as yet introduced. **Urban** recommends (wisely, we think) the use of sterilised normal saline in place of antiseptic lotions; he grafts on to the fresh wound or on to a granulating surface pared down with a scalpel, *not* with a sharp-spoon; and he covers the whole wound accurately with grafts from the patient himself, if possible. **Sick** (*Ct. f. Ch.*, No. 44, 1892) gives 6 successful cases. He speaks strongly of the superiority of grafts from the patient himself, prefers grafts the size of a palm, and does not find it necessary to make them very thin. (It is to be hoped that he takes thick grafts from parts where scar-contraction is of no moment.) He failed to obtain permanent results with frogs' and rabbits' skin, as so many have done.

F. Krause (*Ct. f. Ch.*, 1893, No. 30) has for two years been filling in recent gaps with skin grafts cut according to Wolfe's plan, without any adherent fat. He has thus treated huge ulcers of the leg, and filled in gaps of the face after excision of lupus or cancerous patches. In 21 cases he used more than 100 grafts, and only 4 died completely. Spindle-shaped pieces 20-25 × 6-8 cm. healed as well as smaller bits. The great points to be aimed at are asepsis, the avoidance of all unnecessary injury to the graft, and the complete arrest of bleeding. Krause's method is to disinfect thoroughly with sublimate, excise the growth, disinfect again, wash away all sublimate with sterilised saline, dry area with sterilised gauze, and henceforth use no lotion of any kind. A gauze pad is firmly bound on wound, and tourniquet (Krause uses one) is removed. The area whence grafts are to be taken is disinfected, without brushes or hard rubbing, washed with sterilised saline, and dried. No lotion or antiseptic touches the grafts. They are cut of spindle form, by preference from the flexor and adductor aspects of the limbs, and in their whole length if necessary; fat is subsequently excised, that edges may be brought together. Forceps are used as little as possible on the grafts; they are folded as soon as may be upon themselves, and the duplicature held by fingers for rest of dissection. The grafts are at once placed on the raw surface, the whole of which should be covered. Sutures are very rarely necessary. On an extremity Krause applies an iodoform gauze bandage over the grafts, then a slightly compressive

aseptic dressing; in all cases the part is immobilised. On the fourth day, the dressing is removed, after prolonged soaking in warm boric lotion; the grafts are pale or livid, and slightly swollen; on the seventh day, rosy; still more so on the fourteenth, especially if epidermis is cast, as it always is. Grafts may die superficially or in patches throughout whole thickness; if the gland cul-de-sacs remain, rapid skinning over results. Complete healing takes three to six weeks. The grafts heal on any tissue, and become mobile over it; after twenty-two days an excised bit showed a thin layer of fat on its deep surface. Sensation slowly returns.

Von Bramann (*Ct. f. Ch.*, 1893, No. 30, p. 86) also read a paper before the German Congress, recommending the use of flaps in cases where Thiersch's grafts are insufficient or unsuitable, because a durable and elastic covering is required, and subsequent contraction must be reduced to a minimum. Thus in a case of burn-scar of thumb, third and fourth fingers, and wrist, von Bramann dissected away the scar, freed the tendons, and applied a flap from the thorax; the pedicle was cut through between the fourteenth and twenty-first days, and the result was good. He showed cases of bad machine accidents, in which amputation had seemed indicated; but good results were obtained by the use of flaps. In one the whole back of the hand was denuded, extensor tendons torn, wrist opened, and first row of carpal bones comminuted. These bones were excised; also the lacerated parts of tendons and the ends approximated by suture, gaps of 2 and $1\frac{1}{5}$ cm. remaining in those of third and fourth fingers. Then wound was covered with flap from chest. Extension of fingers was completely preserved, and almost perfect movement of wrist. Von Bramann strongly recommends a trial of this method before resorting to amputation.

The writer has not tried the method in cases of injury, in which the damage to the bed may render the use of a flap necessary; but the need for prolonged fixation of the part, the greater difficulty of maintaining asepsis, and the thickness and clumsiness of the flaps when adherent to their new bed, have caused him to abandon flaps in favour of grafts cut upon Wolfe's plan in cases of scar-contraction, gaps after excision of lupus and new growths, etc.

Transplantation of bone.—**Kapper** (*Wien. med. Woch.*, 1892, No. 45) reports the case of a young man who sustained a compound fracture of the front of the right parietal from a falling bough. Wound was suppurating freely after ten days, and there was pain in wound, head, and right eye. On enlarging wound in bone (size of a shilling) a piece of hard wood, $3 \times 2 \times 0.5$ cm. was removed

from subdural space. Cavity cleansed and plugged with iodoform gauze; granulating healthily in eleven days, when eight flat bits of bone from the skull of a young goose were laid on the dura so as to fill the gap in skull; iodoform dressing; healing in a few weeks, with no opening in bone.

Suture of bones.—**Hennequin** (*Rev. de Ch.*, 1892, Aug. 10) expresses the opinion that this operation is frequently performed unnecessarily. If the ends lie together, union will occur unless some not-understood constitutional vice be present, against which suture is powerless. Hennequin excludes from his strictures fractures of patella and olecranon, and old cases with marked overriding of fragments. [In compound fractures the operation costs little and ensures the essential contact; in simple fractures, so far as England is concerned, suture is performed only in the cases which Hennequin excludes.]

Wiring the patella.—**G. E. Twynam** (*Brit. Med. Journal*, 1893, i., 172) writes from Sydney that he had surrounded a fractured patella with wire eighteen months before H. C. Butcher made the proposal referred to in the "Year-Book, 1893."

Twynam gives four cases with fair results. He does the operation subcutaneously through small nicks in the skin, and uses a needle of special curve (this is important), which is entered opposite the widest part of the bone, kept close to it, and sufficiently deep to hold in the substance of the quadriceps and patella tendons. Wiring takes only a few minutes. The writer has not found the passage of an ordinary-handled needle either under (as in Barker's operation) or round the patella such a very easy matter; indeed, he found the latter somewhat troublesome, even in an open wound.

Sir J. Lister (*Brit. Med. Journal*, 1893, i., 161) reported a case of fracture of the patella from the kick of a horse. After twelve months the limb was useless and flexed, the upper and lower fragments separated by a considerable interval, and firmly adherent to the femur. By a long and difficult operation the fragments were brought into opposition and wired. The patient could raise the limb freely in the extended position, and bend it through a limited angle, which Lister expected would increase. Even as it stands, such a result must be regarded as very exceptional, and as indicating exceptional courage and patience on the part of both patient and operator. The difficulty in keeping up movement in a joint after the division of adhesions is generally insuperable.

Treatment of fractures of lower jaw.—**R. C. Ackland** (*Brit. Med. Jour.*, 1893, i., p. 703) describes a splint which has given very good results at St. Bartholomew's in the treatment of these

fractures. It consists of a plated, guttapercha-lined horse-shoe-shaped gutter to rest on the teeth, and another, lined with washleather, applied to the lower border of the jaw, the two being connected by movable clamps (Figs. 1, 2). It is simple, quickly applied without skilled assistance, applicable to different cases, easily kept clean, involves only the lower jaw, and interferes little with its functions.

The prevention of shortening in fractures.—**C. B. Keetley** (Med. Soc. Trans., Feb. 13, 1893) recommended that ten to fourteen days after injury, ordinary treatment having failed, the fragments should be drilled with a long-bladed bradawl, and a thickly-plated steel pin should be inserted into each, not too near the fracture. Each pin has an arm at 90° lying outside the skin, and these are to be lashed together with silver wire after adjustment of the fracture. The pins are left in till union is firm. Keetley showed 2 cases of fractured femur in which the shortening had been one and two inches respectively.

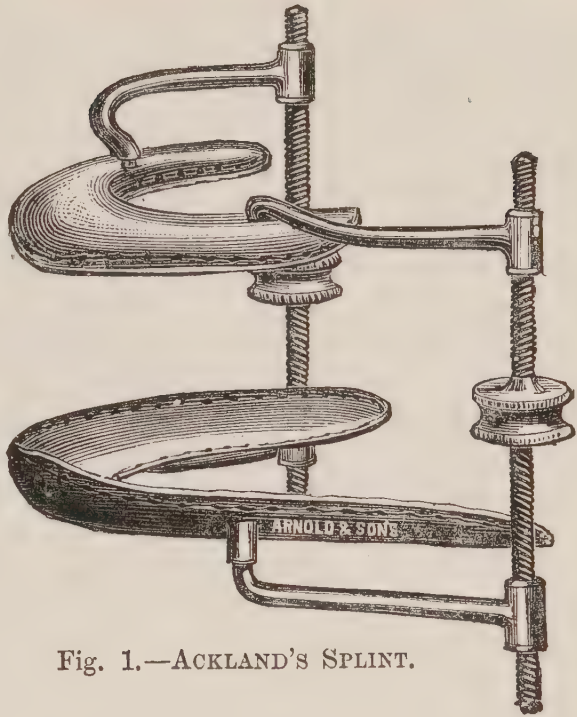


Fig. 1.—ACKLAND'S SPLINT.

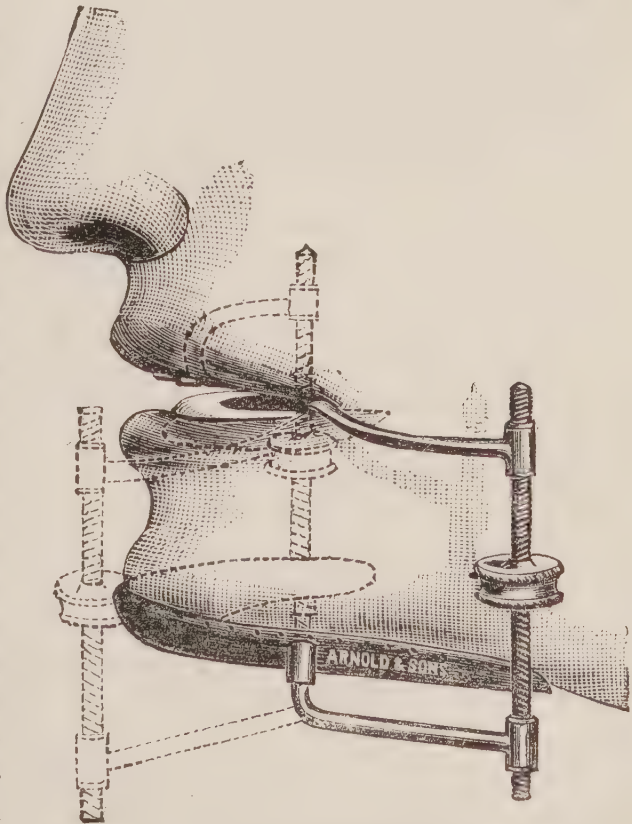


Fig. 2.—ACKLAND'S SPLINT APPLIED.

Treatment of compound fractures.—**F. Treves** ("Ann. of Surgery," vol. xvii., Feb., 1893) has used the following plan with good results. The limb is at once carefully cleaned with carbolic lotion; fracture set as soon as possible—bone being removed, etc. Well-padded wooden splints are used and fixed by webbing bands and buckles only; the wound is covered with iodoform or, preferably, creolin powder, and left exposed. Discharges escape freely at first, then dry with the powder into an antiseptic scab. The method has the merit of simplicity; its success rests upon (1) such immobility as can be secured in the particular fracture; (2) such antisepsis as can be obtained by mixing a powder with the discharges, so as to form a paste too thick for microbes to grow freely in it; (3) the antiseptic value of the powder used—certainly feeble in the case of iodoform, whilst we are not acquainted with any accurate observations on the value of creolin powder. It will be remembered that, many years ago, **Neudörfer** similarly used dry plaster of Paris in the treatment of gunshot fractures.

Fracture of long bones in tabes, syphilis and paraplegia.—**W. Rivington** (Med. Chir. Trans., Feb. 28, 1893) related 5 cases of fracture from slight causes in tabes and in paraplegia of fifteen years' standing. All tabetic cases occurred near joints—1 surgical neck of humerus, 3 at or near neck of femur, 1 of both leg-bones three inches from knee; 2 of the femora did not unite, and another case united imperfectly; much callus formed in the 2 which united. The patients were in middle life, and in the pre-ataxic stage; 2 gave a syphilitic history, but Rivington thought there were no signs of gummatous infiltration. He was sceptical as to the occurrence of "fragilitas ossium." **Hulke** added another case of fractured tibia in F., 34, with early symptoms of tabes; feeble union and refracture from still slighter violence. **J. Hutchinson, junr.**, contended that a central gumma might have led to the fracture in the 2 cases with syphilitic history, for such lesions give no external sign. In 27 cases of tertiary syphilis, **Chiari** found central gummata of long bones in 9. **H.** quoted an interesting case of fractured radius, which united firmly in six weeks on iodide of potassium after four years of non-union. Syphilis caused fracture, either by gumma or by nerve-lesion. **Buzzard** gave reasons for believing that this lesion is a sclerosis near the vagus nucleus, thus accounting for the frequent association of crises gastriques with these fractures and the similar arthropathies. **Barwell** spoke in favour of a congenital "fragilitas," mentioning 2 cases of hereditary tendency to fracture.

Removal of clavicle for small round-celled sarcoma.—**Haslam**

(*Brit. Med. Jour.*, 1893, i., p. 848) reported to the Medical Society one of these rare cases. He effected removal through a cut along the whole length of the bone with a short one upwards over the most prominent part of the growth. The deltoid and trapezius were cut through, joint and ligaments at outer end divided, outer end raised, and subclavian vessels separated. The inner end was similarly cleared of muscle and ligament, and the bone removed. No bleeding of importance. Suppuration and slow healing. After five months there was a sound scar, little deformity, and considerable, though not perfectly free, movement.

Treatment of old dislocation of the shoulder and other joints has occupied the attention of surgeons a good deal since Lister's paper on this subject. **Sir W. MacCormac** (*Sem. Méd.*, 1893, p. 150) opened a discussion upon it at the Congress of French Surgeons. He had operated on M., 40, who, three months earlier, had broken his humerus high up; fifteen days later, head was found to be out of socket, and reduction was attempted; result, callus gave way. MacCormac used a cut "parallel to axis of limb, passing just outside coracoid, crossing head of humerus obliquely, and corresponding to pectoro-deltoid interval," freed the head and tuberosities completely, found that great tuberosity and anterior third of glenoid fossa had been broken off, whilst the rest of the fossa was full of connective tissue. This was removed, reduction effected fairly easily, and arm fixed with elbow carried forward. Free suppuration followed, and, no progress being made, head was removed at anatomical neck on nineteenth. Pain, which had been severe, ceased at once, and daily improvement could be noted. In a recent case MacCormac, failing to reduce the head, would excise it at once rather than wait for union or endeavour, with Helferich, to pin head on to shaft and then reduce. Croft and Clutton had each performed immediate excision with good and fair results respectively. **Severeanu** failed to reduce a subcoracoid dislocation four months old by traction of 200 kilos. He made a 10-cm. cut across acromion, 2 cm. from tip, sawed through the process, made a vertical 8-cm. cut down from anterior end of first, and turned the flap out, opened the joint in the vertical line, and found the fossa healthy. Traction of 170 kilos failed to move the head. A gouge was then placed behind head and used as a lever, reduction occurring without difficulty. Acromion and skin were sutured separately. Hand could be put to mouth on thirtieth. **Pollosson**, of Lyons, referred to 5 cases—1 six months old, the rest three to six weeks. He used Ollier's cut parallel to the pectoro-deltoid interval. In the first 3 cases, he reduced easily and obtained very good results; in the 4th and 5th cases, the retracted

soft parts and turned in capsule opposed reduction ; in 1 (M., 64, three weeks) a large effusion of blood was found, and Pollosson had to add to the usual vertical one a cut across some fibres of deltoid. Pollosson would thus treat all cases irreducible by traction ; and, failing to reduce by operation, would resect the head. In Lyons alone, Pollosson spoke of 1 case of avulsion of the limb, and 2 of death following on attempts to reduce old dislocations by traction.

Recurring dislocation of the shoulder.—Ricard (*Sem. Méd.*, Nov. 2, 1892) has twice operated as follows, and with good results. He cuts the deltoid from clavicle and acromion and turns it out as a thick flap, draws the coracobrachialis in, separates the subscapularis tendon from the capsule, rotates in the arm, and passes three strong silk sutures through the muscle and capsule in vertical planes 1 cm. apart. Deltoid and skin are sewn up. The results, Ricard says, are superior to those of resection of part of the capsule or of the head.

New operation for old unreduced dislocation of hip.—A. Lane (*Clin. Soc. Trans.*, Feb. 24, 1893).—M., seven, dorsal dislocation acquired three years ago ; forced flexion enabled head to be placed in acetabulum, but it slipped out on extension. Gait was awkward and insecure, with much lordosis and two inches shortening. Lane divided all the muscles attached to the trochanters and upper part of linea aspera, cut resisting adductors subcutaneously, turned out head which was large and mushroom-shaped, made an excavation on ilium just below anterior inferior spine, shaved head down to about normal size, placed it in the new socket and fixed it there by a stout stitch through rectus tendon and anterior ligament close to the femur. All seemed to agree that the result was most satisfactory.

Lane seems rather to have applied to an acquired dislocation Hoffa's operation for congenital luxations. The writer has twice attempted it : first, in a case of pathological dislocation (apparently from an acute serous effusion in connection with acute necrosis) of nine months' standing ; the head was with much difficulty brought down to upper part of socket beneath rectus, but the anterior ligament yielded after a time, and the head slipped up, the dislocation becoming an everted dorsal. The second case, also of nine months' standing, was from a blow on the hip from an engine ; incision showed that the head in the dorsum had driven the whole upper posterior edge of the acetabulum before it. No further attempt was made to reduce ; the head was excised ; inversion, etc., of limb was removed, and the man can now bear his whole weight on the limb.

2. Sacro-iliac disease.

G. H. Makins (*Chir. Soc. Trans.*, Mar. 10, 1893) gave expression to the growing feeling among surgeons that erosion, after arthrotomy or trephining, of this joint greatly improves the prognosis—though this must still vary in gravity with the extent of involvement of bone and the position of the abscess.

3. Hip-joint disease.

H. C. Howse (*Med. Chir. Trans.*, Nov. 8, 1892) stated that much good might result in very bad cases of hip disease from amputation through the thigh—in that (1) the lever having its fulcrum at the hip is shortened, and movement, friction, and muscular spasm are diminished; and (2) the formation of good blood is favoured by removal of a mass of tissue which acts chiefly as blood-consuming. After amputation above knee no splint is necessary to fix the hip. If the disease be not arrested, excision may be done; and, this failing, amputation at hip with better chance of success. R. L. Knaggs added 2 cases, but considered the method is indicated *after* excision had failed and when amputation at hip would probably prove fatal from weakness or albuminoid disease. It offered a better chance of saving life and also a portion of the limb. Even if amputation at hip should become necessary, its severity was diminished and more time could be given to examination and treatment of the acetabulum.

No death from operation occurred among 12 cases reported. The results were: Amputation through knee, 1, convalescent. Ditto, subsequent excision, 1, recovery. Excision: subsequent amputation at knee, 3; 2 convalescent, 1 died later of general disease. Ditto, ditto, amputation at hip, 4; 1 recovered, 2 died later of general disease, 1 in good condition after 3 years, but with sinuses and albuminuria. Amputation at knee, ditto at hip, 3; 2 recovered, 1 old case, very bad, improved.

The treatment of anæmia by the amputation of limbs excited some adverse criticism. The arguments and statistics by which the suggestion was supported do not appear sufficient to upset the ordinary plan of treatment—which we take to be: to attack the disease first and freely; to give rest and fresh air by mechanical means, and to combat anæmia also in other ways; to do a Furneaux Jordan's amputation—in 2 stages if it be necessary, or if it be thought that a long bone containing stump may be preserved.

4. Complete erosion of ankle.

A. Lane (*Chir. Soc. Trans.*, 1892, Oct. 28) showed 2 cases upon which he had operated in an extremely thorough manner, his incision dividing everything around the ankle except the posterior

libial vessels and nerve and the deep tendons between which they tie: adduction of the foot enables all synovial membrane to be removed—even that between tibia and fibula, after section of the anterior, posterior, and inferior interosseous tibio-fibular ligaments [which seems to be quite unnecessary]. He stated that the astragalo-calcaneal joint could be exposed by division of all its superior and external coverings; and that after either of these operations the astragalus could be easily excised. The foot seemed to be equally useful whether the tendons were or were not sutured: yet in his second case Lane had to shorten the extensors of the toes. Care is necessary in applying plaster of Paris to prevent the fibula from falling backward. **H. H. Clutton** had operated in seven cases by such erosion as he could perform through short incisions in front of each malleolus followed by two to three years' rest on a knee rest: six recovered and one was amputated. **H. Page** stated that he had found Hüter's operation by anterior transverse incision (see "Year Book," 1891, p. 188) give full access, whilst it was much less serious. With this the writer entirely agrees.

5. Tuberculosis of foot.

Le Dentu (*Sem. Méd.*, No. 21, 1893) reported to the French Congress two cases in which he had replaced excised tuberculous bone by decalcified calf's bone. In the most extensive case, the astragalus, scaphoid and os calcis were removed and replaced by three roughly corresponding pieces of decalcified bone. Superficial suppuration occurred after a few months and lasted a short time. Ultimately, complete recovery ensued, the limb being strong and useful, with good movement in new tibio-tarsal joint.

6. Surgery of the bloodvessels.

Aneurysm of abdominal aorta treated by electrolysis through introduced wire.—**Stewart** (*Am. Journ. Med. Sc.*, Oct., 1892), M., 32, sac very large, involving thoracic and abdominal aorta and bulging in left loin. $2\frac{1}{2}$ ft. of stout silver wire were passed into sac and a current gradually increased to 70 m-a. was kept at this point for an hour. On the third day, swelling in left loin was sunken and no longer pulsated expansively; whole of lower part of aneurysm was firmer. It ruptured on the ninth day. Firm clots were formed round wire, and in many parts of sac, together with soft clot.

Subclavian aneurysm.—**A. Q. Silcock** (*Harveian Soc.*, Feb. 16, 1893) showed M., 46, who had suffered from a pulsating swelling above and below outer two-thirds of clavicle and extending into axilla. The first part of artery was $1\frac{1}{2}$ inch across, so wound was closed without a ligature being applied. It became septic at once, pulsation steadily diminished, and pulse at wrist was lost,

Only slight pulsation at seat of aneurysm remained. Probably the septic inflammation had something to do with the cure: unfortunately the remedy is a dangerous one.

Traumatic aneurysm of external iliac.—**H. H. Clutton** (*Clin. Soc. Trans.*, Oct. 14, 1892). A boy ran a pocket-knife into his abdomen, above centre of Poupart's ligament: very little external bleeding, but rounded deep swelling [arterial hæmatoma] in which pulsation and bruit were detected on the sixth day. "Aneurysm" of *external iliac* above epigastric diagnosed on the thirtieth. Time allowed for improvement of collateral circulation. On the fifty-second, kangaroo tendon ligature applied above and below aneurysm; rapid healing, recovery. Small lump still (4 mos.) present; femoral pulsating at groin less distinctly than on other side.

Ligature of iliac arteries through the peritoneum.—**A. M. Sheild** (*Brit. Med. Journal*, 1892, ii., p. 974) raises the question whether post-peritoneal ligatures of great vessels should be any longer taught in courses of operative surgery. Sheild would tie the *external iliac* through a vertical cut over the artery, which would enable him to find the limits of the aneurysm and state of the vessel above it. [For some years the writer has taught that the post-peritoneal are dead-house operations only.] **C. Lucas** (*Ib.*, 1033), in 1889, tied the common iliac artery through median abdominal wound for increasing aneurysm of the *external iliac*, and the patient recovered rapidly. **Ballance** and **Edmunds** (*Ib.*, 1083) note that **Dennis** of New York reported three cases of transperitoneal ligature of the internal iliac, with two cures. They think the post-peritoneal operation should be reserved for the external iliac, and by no means always for that. **F. Treves** performed transperitoneal ligature of the internal iliac for sarcoma of buttock ("Year-Book," 1893, p. 215). **J. B. Footner** (*Ib.*, 1033), mentions a case of iliac aneurysm in which he compressed the aorta under chloroform for 63 and 90 minutes. Little effect resulting, he intended tying the external iliac transperitoneally, but the aneurysm burst and he had to open the sac, tie the external iliac (lower half was involved) superficial and deep femoral, deep epigastric and circumflex iliac vessels—all of which arose from the sac. Recovery resulted after amputation of leg below knee for gangrene. **C. B. Keetley** (*Ib.*, 1083) agrees as to the advisability of transperitoneal ligature, but would never use Lister's tourniquet—the aorta being safely compressed by a suitable instrument of his own passed through a small opening in the abdominal wall. **Mitchell Banks** (*Ib.*, 1163), referring to Footner's case, expresses the opinion that aseptic ligature, not compression, should have been first thought of. Banks has never seen compression do anything for an aneurysm

which a well-conducted ligature could not do more easily, quickly, and safely. In M., 64, with inguinal aneurysm of a few weeks' duration, and as big as a fist, Banks tied the *external iliac* through a 3-in. cut in the *linea semilunaris*, with carbolised catgut drawn just tight enough to stop pulsation; peritoneum was then sewn over ligature, and abdominal wound closed. M. left hospital well on forty-second day, having had an attack like pulmonary embolism on the eleventh day. Fifteen years earlier Banks had opened abdomen in midline for a huge aneurysm which had overlapped the aorta, so that even this vessel could not be tied. It is evident, therefore, that surgeons are rapidly abandoning the post-peritoneal operations for ligature of arteries.

Gluteal aneurysm treated by Macewen's needling.—A. G. Miller (*Brit. Med. Journal*, 1893, i., 117). M., 75, 5 months' history of swelling, no injury, no syphilis, health excellent. Swelling covered sciatic notch and was entirely extrapelvic. Six long steel pins passed in different directions into sac until they struck opposite wall, then withdrawn so that they might scratch it as tumour pulsated; left in 30 minutes; caused little pain. Tumour firmer next day, measured $4\frac{3}{4} \times 4\frac{3}{8}$. Four pins introduced 12 days later—stouter than the first lot, because these bent when pushed against the now thickened sac. No pulsation 13 days later, swelling $5\frac{3}{4} \times 4$. Much pain in abdomen on this day, and tumour was found in epigastrium, recognised later as malignant. Man died about 9 weeks after cessation of pulsation: aneurysm full of firm clot except for a softer spot near centre. Epigastric tumour was a sarcoma.

7. Nervous system.—Surgery of the brain.

Epilepsy.—M. Warnots (*Sem. Méd.*, 1893, No. 21) gave to the French Congress the results of 32 operations on the brain which he had performed. From 10 operations for Jacksonian epilepsy, with varying results, he concludes that early trephining after cerebral injuries should be employed as a prophylactic, thus confirming the views expressed by Horsley at the last International Congress ("Year-Book," 1891, p. 211). In one of the above cases, in which flexion of the thumb was the signal symptom, he excised the thumb centre; 7 months after operation paralysis of hand persists, but no fit has occurred, whereas there used to be thirty a day.

Warnots had operated six times for "Essential Epilepsy;" in one case in which cortical origin was suspected, he trephined on the left side without result. Later, the fit was followed by trembling of the left lower limb. At the patient's earnest request, Warnots operated on the right side, and seeking out the

lower limb centre with electrodes, he here found and removed a mass of Pacchionian glands with considerable exudation about them. The fits since have been rare and confined to the upper limb.

Perhaps the following case, read by Malherbe at the same congress (*Ib.*) may be taken as illustrating Warnots' views in early trephining. F., 50, fell several feet on to her head; a wound above eyebrow was disinfected and sutured. Suddenly on the 5th day, convulsions of right side of face, extending to right limbs, and finally to left limbs, whilst head was jerked rapidly and eyes deviated towards side of lesion. Trephining at frontal eminence; nothing abnormal; drainage with iodoform gauze. No further convulsions; memory and consciousness completely restored. Seven months of health had since elapsed. Though the drainage may have aided the recovery of consciousness, it is difficult to assure oneself that the operation could in any way ward off after-results, or, even, that she would not have recovered as well if left alone.

Epileptiform seizures were successfully relieved by G. Barling, who trephined over left motor area, found and removed an extradural tubercular deposit. (Short note in *Brit. Med. Journal*, 1892, vii., 1136.)

Drainage of the sub-arachnoid space in general paralysis.—We had thought this chapter closed, but E. Goodall (*Brit. Med. Journal*, 1893, ii., 462) has re-opened it. Adopting the inflammatory view of the nature of the disease, Goodall argued that drainage of the lymph-space would *à priori* be the best remedy. He had operated on an early case, but had failed to establish anything like efficient drainage with horsehair; in future he would use a fine tube from the first. He denied that the failure hitherto had shown protracted drainage to be useless, for such drainage had never been established. He agreed with G. M. Robertson that the question of draining the sub-arachnoid space of the cord would always have to be considered.

Hydatid cysts.—At the Australasian Medical Congress, Verco (*Brit. Med. Journal*, 1892, ii., 1066) showed that one-third of all cases of hydatids of the brain communicated with the lateral ventricle, and that many died after operation from escape of cerebro-spinal fluid. He suggested that after draining and washing out cyst as usual, the wound should be closely sutured, and no drainage allowed.

Llobet (*Rev. de Chir.*, Nov., 1892) gives an interesting case. M., 13, with headache, Jacksonian epilepsy, almost complete right hemiplegia, with contracture of limbs, excessive right patellar

reflex, partial aphasia, extreme dilatation of right pupil, and almost complete loss of intelligence and memory; symptoms increasing; patient strong and healthy. On left side, a flap 8 centimètres wide by 10 centimètres high, reaching to 1·5 centimètre from vertex, with a pedicle 3-4 centimètres above pinna, was marked out, bone divided with circular saw, dura separated, pedicle fractured, and the osteo-cutaneous flap turned down. Dura smooth and bulging, clear fluid drawn off by needle; dura and thin layer of cortex incised; cyst easily removed (capacity 260 grms). Flap replaced, tube below. Fair recovery, but sight and memory not regained in six months.

8. Surgery of the spine and spinal cord.

Laminectomy for injury.—**M. Villar** (*Sem. Méd.*, 1893, p. 149) reported to the French Congress the case of a man upon whose back 100 kilos. had fallen, causing depression of the twelfth dorsal laminae, dorsolumbar pain, tingling, paralysis of lower limbs, with anæsthesia up to popliteal spaces. Depressed laminae removed on fourth day; wound healed well. Motion returned in right limb and became perfect, and sensation improved; micturition and erection became normal.

Extirpation of an intra-dural fibro-sarcoma.—**Caponotto and Pescarolo**, (*Rif. Med.*, Nov. 25, 1892). M., 33, paraplegic ten years, with loss of control over bladder and rectum, and anæsthesia up to an irregular line about fifth space; general health good. Incision from seventh cervical to third dorsal spine, second and third laminae removed, dura opened and upper edge of white tumour seen; fourth and fifth arches resected, and tumour easily separated by finger from dura, which adhered to spinal canal; no trace of cord here—it seemed to become flattened and blended with dura. Wound drained, healing slow. After stay in country, health excellent; no improvement in paralysis.

9. Surgery of the nerves.

Trigeminal neuralgia and its treatment are attracting much attention everywhere. At the French Congress (*Sem. Méd.*, 1893, p. 149) **Février** reported upon *Resection of super. maxillary nerve and Meckel's Ganglion*, in a case of twenty-two years' standing. He followed the temporal route, incising along the lower edge of the zygoma, resecting the posterior part of the malar, detaching the temporal, and then seizing the nerve with a hook introduced into the fossa, and twisting and tearing it out. Bleeding was slight, recovery perfect, and there had been no return of pain. [Time?] **Témoin** had operated similarly without obtaining any relief. **Chalot** had operated thrice, discovery of the nerve difficult on each occasion. Chalot thinks the whole malar should

be resected. Only one of the three patients remained free from pain after fifteen months.

Doyen (*Sem. Méd.*, 1893, No. 21) regards high operations on nerves as permanently curative of neuralgias. He stated at the French Congress that he had operated on eight incurable cases of tic, one being complicated by spasms of muscles of deglutition, and two others by almost complete inability to masticate. All eight cases were cured, though some years have elapsed. In 7 he has removed completely the super. maxillary nerve, by Carnochan's method, seizing the trunk with clamp forceps close to the foramen rotundum, and twisting it steadily till it comes out, generally bringing a portion of the Gasserian ganglion on its end. He endeavours to spare Meckel's ganglion, feeling sure that destruction of its sensory root would render it harmless. In many of these cases other nerves—branches of the first and third divisions—were simultaneously resected. But in his first case recurrence took place; so he set himself to consider how best to remove the Gasserian ganglion. The following method was adopted:—Vertical incision 5 centimètres long, midway between external auditory canal and outer edge of orbit; only 15 mm. of it below the zygoma and the superior division of the facial ought to be spared. [This probably could not be done.] Resection of the zygoma and coronoid process, exposure of the speno-temporal suture and bones forming it; the horizontal portion of the great wing in front of the articular eminence is cleared with a rugine and the foramen ovale exposed; it lies 20-25 mm. from the infra-temporal crest—an important rallying point. The external pterygoid plate should also be recognised, and the foramen ovale will be found behind and external to it. The inferior dental and lingual nerves are seized with forceps, three or four centimètres from the foramen, and kept gently stretched; the temporal fossa is trephined over the speno-temporal suture, remembering that the middle meningeal vessels lie beneath; the opening is enlarged with gouge forceps, the great wing and squama being equally removed, and finally the base of the skull is attacked, so as to reach and open widely the foramen ovale, to which the tense nerves are the guide. The dura mater is stripped up cautiously to the side of the sella turcica, separating the two lamellæ which enclose the ganglion. Doyen thus reached without bleeding the superior edge of the petrous, and divided the trunk of the fifth above the ganglion, having passed between the carotid, the superior petrosal and cavernous sinuses. He exhibited the ganglion almost intact, with 15 mm. of the first and second divisions, and 35-40 mm. of the inferior dental and lingual. The

patient recovered without a bad symptom, though she was very stout and in bad condition. The pain was removed, and she had no eye trouble. Doyen claims that his operation is the first section of the fifth above the ganglion and complete removal of the latter; but he does not give the date. He proposes to extend the operation to spinal nerves, and to divide their posterior roots for obstinate neuralgia, *e.g.*, sciatica.

Krause (*D. Med. Woch.*, April 13, 1893) gives the following case:—F., 68, severe pains for twenty years over left side of face. Division of inferior dental, and, later, of inferior maxillary near cranium, gave temporary relief. In operating Krause lays much stress on keeping dura intact; within it, the brain can, without permanent injury, be considerably raised by a spatula, pressure being widely diffused. A large flap was turned down in temporal region, a small opening chiselled in squama, and rest of bone cut away with forceps; dura detached with finger easily; meningeal vessels double-tied and divided, and ganglion exposed with its sensory root, its third, second, and base of first divisions being visible. The latter was not exposed further for fear of third, fourth, and sixth nerves; second and third divisions were cut with tenotome, ganglion seized with forceps and twisted out; first division tore off close to ganglion, sensory root (22 mm.) came away entire. Operation 55 min. Patient free from pain up to report (nine weeks).

L. McL. Tiffany (*Jnl. Am. Med. Ass.*, 1893, i., 535) reported to the American Medical Association two cases of removal of the Gasserian ganglion. Both had been operated on before, one several times. He chose the temporal route and raised the dura (which he wounded without ill-result) till the ganglion and its roots were exposed. He noted that more room was obtained as shock came on and the brain shrank. He managed to leave the motor root, and his patient recovered without motor paralysis, and had no pain during "some time" after the operation. The second case was very similar.

Hartley (*Annals of Surgery*, vol. xvii., Pt. V., May, 1893). Omega-cut from ext. angular proc. to tragus and reflection of flap of soft parts and bone ("Year-Book," 1891, p. 189), exposing a 3-inch circle of dura; ligature of meningeal vessels, raising of brain and dura from temporo-sphenoidal fossa—bleeding being stopped by sponge pressure. Exposure of first, second, and third divisions of fifth, together with carotid artery and cavernous sinus with comparative ease! The necessary portions of nerve were excised, and flap replaced. Periosteum muscle and skin sutured. Excellent recovery. Had had no pain seventeen months after operation,

and had gained 16lb. ; paralysis of muscles of mastication on one side caused little inconvenience.

These cases would seem to show that complete excision of the Gasserian ganglion is possible, and that it has been safely performed during the past year by four surgeons. It will be remembered that Horsley, from post-mortem experience, regarded *complete* removal of the ganglion as impossible, because removal of its upper division was always accompanied by wound of the cavernous sinus ("Year-Book," 1893, p. 220).

Brachial neuralgia due to exostosis of first rib ; effect of cocaine applied to plexus.—**Verneuil** (*Rev. Gén. de Clin. et de Thér.*, Nov. 30, 1892). F., twenty. Numbness of arm five years, small supra-clavicular tumour four years, and soon after pain over the whole upper limb. Tumour attached to first rib, close to scalenus ant. with artery and nerves over it. Growth removed ; pain ceased, but returned in six months, when tumour was again found and removed. Seven years later (1892) pain recurred, but no tumour could be felt ; scar was tender, and was freed from subjacent plexus. No relief followed this or medical treatment until Verneuil exposed plexus, and applied cocaine (twenty per cent.) to its trunks. The patient was free from pain on recovering from anæsthesia, and has remained so.

10. Surgery of the lung.

R. J. Godlee introduced a discussion on this subject at the 1892 meeting of the British Medical Association (*Brit. Med. Journal*, 1892, ii., 829). With regard to *empyema*, Godlee thinks the best spot to open a complete empyema is opposite the ninth rib, just inside the angle of the scapula, as it is above the diaphragm when fully drawn up, and therefore soon becomes the most dependent spot when lying or sitting. It is sufficient without counter-opening in all cases. He always resects a bit of rib, unless patient be too ill, to allow of digital examination of cavity, removal of lymph, and re-introduction of tube. In septic cases he divides the intercostal vessels between ligatures, lest the tube should ulcerate into them. He uses a flanged rubber tube, long enough to enter cavity, and never shortens it—a rigid tube is sometimes painful. The withdrawal of a tube is always experimental. Godlee reopens wound daily, at first to see quantity and quality of discharge, and give it exit. The patient should not be placed on sound side for operation, but on back with side hanging over, or semi-prone on diseased side, the surgeon sitting in the one case, standing behind in the other. Ether is specially contra-indicated if there is expectoration. In double empyema, open the second after an interval. In tubercular

empyema and pneumo-thorax, especially in adults, if quiescent, a free incision will probably accelerate death. In these cases Godlee speaks approvingly of a plan similar to Lewaschow's ("Year-Book," 1892, p. 235). A needle connected with a bottle of sterilised water or boric lotion is inserted into the front of the cavity, and aspiration is slowly performed behind till clear lotion escapes; then the anterior needle is removed and most of the fluid withdrawn. Injection of the cavity should never be unnecessarily employed—foul cases require it. Escape for fluid should be ample, lotion warm and non-irritant. Troublesome coughing often results from washing out cases which are being expectorated.

The mortality from empyema is very appreciable; the patient may die before the empyema is opened, or after, from shock due chiefly to hæmorrhage from granulations, from hæmorrhage due to ulceration of intercostal vessels opposite a tube, from cerebral abscess (disproportionately frequent), acute septic nephritis, other form of septic poisoning, or amyloid disease, embolism or during irrigation [acute tuberculosis]. Godlee notes that clubbing of fingers and amyloid disease are slow in appearing, and may vanish even when well marked on removal of their cause.

In the discussion it appeared that some always irrigate a fresh case till the stream returns clear. The majority do not, and they probably feel that the minority will join them when they have had a sudden death or two. Some used a rigid tube for a few days, others slit up a space for 2 to 3 inches to ensure drainage; many omit resection of rib as routine practice. A mid-axillary incision gives as good results as any, according to **Jordan Lloyd**, and we are inclined to agree with him. It is also the easiest opening to make; Godlee's incision goes through the latissimus. **J. R. Ratcliffe** urges the localising of an empyema by the needle and incision through a needle track which has *just* struck pus. In bad cases **Mayo Robson** uses cocaine; Godlee uses no anæsthetic. **C. Symonds** pointed out the value in double cases of aspirating the side left unopened. **Newman** mentioned a cure by simple incision of an empyema containing 13 pints. **Jordan Lloyd** thought the main question was: "Is it tuberculous or not?" The latter generally recover, the former generally die. Local empyemata are generally tubercular; when small, all tubercular stuff may be removed with good result. **Mayo Robson** would drain a tubercular case as he would a tubercular peritoneum—a practice from which Godlee emphatically dissented.

In *pneumothorax* (spontaneous or traumatic) aspiration may relieve. The writer has given much relief by leaving a canula in the chest-wall for hours under a wool dressing.

With regard to *pulmonary abscess*, Godlee says that, of a good many he has treated, most have been bronchiectatic, and only one has been cured; the rest died of intercurrent disease, or tube could not be withdrawn. In exploring for the cavity always use suction to diminish risk of infecting pleura, which may be healthy over it. In excising rib, therefore, avoid wounding pleura, and before opening it attach it to lung all round by series of stitches sunk well into lung by Hagedorn's needle. Single basic cavities are most favourable, but rare, especially tuberculous. Godlee has no experience, but would drain a large apical cavity if the other apex were sound, although results hitherto have not been satisfactory. He does not even mention the removal of parts of the lung, except to say, what is undoubtedly true, that circumstances would very rarely justify the removal of a malignant growth of lung. We do not know that pneumonectomy has ever been attempted for malignant disease, but it has been accomplished in man for tubercular disease at least twice.

Pneumonectomy.—**Tuffier** (*Bull. et Mém. de la Soc. de Ch.*, Dec., 1892) referred to a case in which, more than two years ago, he had resected the right apex for tubercle by incision through second space. Wound healed by first intention, and on the ninth day respiration was perfect; no pneumothorax. He is now in perfect health, 16 lb. heavier, doing heavy work, able to run without dyspnœa, and showing no difference between the two sides of his chest.

Lowson (*Brit. Med. Journal*, 1893, i. 1152).—F., thirty-four, symptoms one year; physical signs confined to right apex. Treated for six months; got steadily worse, but still not very ill. Disease probably confined to right apex. Chloroform administered, oxygen and batteries being ready, but at no time were they required. Incisions—from mid-sternum along second rib nearly to anterior axillary fold; downwards from inner end for 2 inches in mid-line; skin and muscle reflected from second and third ribs, and many vessels secured; intercostals were separated above and below from both ribs, and pleura detached, and ribs divided through cartilage and near exterior angle of wound with fret-saw; pleura punctured with needle, and air, passed through hot, strong carbolic lotion, was pumped in; slow collapse of lung and no dyspnœa; pleura opened along whole length of wound. Extensive adhesions of upper lobe anteriorly took some time tearing through; disease lay under these; lung transfixcd below it with blunt-handled needle armed with boiled silk, steeped in ethereal solution of iodoform, and tied off by Staffordshire knot. Part removed was size of half-fist, contained a tuberculous mass surrounded by granulations,

cavity sponged out, stump rubbed with iodoform powder, and dropped. The whole organ was palpated during operation for other deposits, and Lowson was struck by the ease with which this could be carried out; the fingers seemed almost to meet even through the thickest parts. Wound closed; no drainage. External temperature 99° , pulse 84, respiration 36. On the fifth day patch of dry pleurisy on left side greatly crippled respiration. Temperature $99^{\circ}\cdot6$, pulse 108, respiration 46; fomentations and morphia; soon passed off, leaving respiration at 28. At end of second week external temperature began to rise, finally reaching $101^{\circ}\cdot6$. Fresh tubercle suspected, but dulness posteriorly and escape of blood at outer angle of wound led to diagnosis of hæmothorax. Pulse 88–96; patient feeling and eating well. Rather more than a month after operation much altered blood burst from wound; the rest was sucked out with syringe. Temperature became normal; respiration 24. Gradually the discharge became purulent; it was sucked out and gave no trouble. To avoid this Lowson would drain for a couple of days. On eightieth day she went home, improving rapidly in appetite and flesh; discharge very slight. Lowson thinks it would be possible to remove many bits of lung if multiple foci were found.

Thoracoplasty: Treatment of wound of lung.—**Delorme** (*Sem. Méd.*, 1893, 150) suggested at the French Congress the not very novel idea of raising a flap of chest-wall in the treatment of old empyema. Ordinarily he would make it extend from third to sixth rib inclusive, and from two fingers' breadth outside sternum to axillary edge of scapula; the soft parts to be raised first, then the ribs and pleura, a hinge of soft parts being left behind. He had tried the operation only on the cadaver, and therefore had not discovered that in many cases the loss of blood would be serious, and that the side does not fall in at all readily after such an operation. But Delorme applied the idea to the treatment of hæmo-pneumothorax in an officer who had stabbed himself four times in the chest with a double-edged amputating-knife. Hæmorrhage recurred on the first and second days, and Delorme was called in on the evening of the second in consequence of free fresh bleeding. Anæmia was extreme. Having determined that the bleeding was intrathoracic, a large flap was turned back. Three bleeding wounds of the lung were clamped, one of them being sutured with silk. Further search revealed a wound of the pericardium 1 cm. long, far forwards, and a bleeding pericardial vessel. A clamp stopped this. The patient died quarter of an hour afterwards. *Post-mortem.*—The right heart was superficially scratched, the pericardium was wounded both behind and in

front, and blood from a vessel wounded in latter ran out in front of hilum pulmonis through former.

Michaux (*Ib.*) had operated thrice by two shorter flaps turned backwards and forwards; access is free. In one case he discovered pus between lung and diaphragm.

Subdiaphragmatic abscess.—**Peyrot** (*Arch. de Toc. et de Gyn.*, Nov., 1892) gives a case illustrating the proper treatment. Believing that he had to deal with a small basic empyema after abortion and curetting of uterus, he resected 2 inches of the tenth rib, incised pleura, and found no fluid; punctured diaphragm; much pus escaped. Diaphragm sutured to wound in pleura, and one long incision made in it. The patient insisted on leaving hospital after five weeks, and returned moribund in another week. The right kidney contained a calcified hydatid and pus infiltrated the tissue around it from iliac fossa to diaphragm.

11. Surgery of jaws, mouth and œsophagus.

Inframaxillary incision for excision of upper jaw.—**Lowson** (*Brit. Med. Soc.*, 1893, i., 949). Lower lip divided in mid-line and raised from jaw by cut along its edge to middle of masseter. Then side of face and ala of nose were turned up and palate cut away—plenty of room being given. Whole jaw not removed, but there would have been no difficulty in carrying it out. Scar and deformity very slight. We should have thought that a better result would ensue from the old plan of dividing upper lip in mid-line into the nostril.

Submaxillary cancer.—**A. Ogston** (*Brit. Med. Journal*, 1892, ii., 1213) recommends a vertical cut down from angle of mouth and then along lower edge of jaw to angle; reflection of soft parts and removal of piece of jaw over diseased glands, together with primary growth of tongue or mouth, cheek, and glands. A V-shaped piece of skin over gland may be removed if necessary. When carotid glands are affected cure is rare; but with submaxillary only Ogston thinks that it is not rare: though of twenty-nine cases he can state only that one died, five have recurred, and he feels sure many more must have recurred. Of course any piece of jaw adherent to disease—or even suspected of adhesion—must be removed; otherwise we should have said there was plenty of room to remove the submaxillary glands which lie between the salivary gland and the jaw. Doubtless the chief deterrent to early and free removal of parts of the mandible is the deformity which results.

Wiring the jaw.—**Stanley Boyd** (*Proc. of Odont. Soc.*, 1892) showed a young woman, a piece of whose mandible he had resected for sarcoma. Her chin was in the mid-line and the bite

still perfect—the two fragments of bone being held apart by a piece of knitting-needle inserted between them. More recently (*Clin. Soc. Trans.*, October 27, 1893) he showed an old woman with the form of her chin preserved, after removal of the symphysis, by a “spanner” of very stout silver wire. Still more recently he has used two such spanners to give greater depth to the chin. These spanners apparently heal in easily and become surrounded by exceedingly dense fibrous tissue. Should they prove permanencies, one reason for avoiding resections of the jaw will have been removed.

Lympho-sarcoma of tonsil removed.—**R. Johnson** (*Clin. Soc. Trans.*, March 10, 1893). Female, fifty-three; six months' history. Growth measured $1\frac{1}{2} \times \frac{7}{8}$ inch, and was of left tonsil. Soft, large glands near angle of jaw and smaller glands behind sterno-mastoid. Incision from lobule of ear down to level of hyoid, and then for 1 inch along anterior edge of sterno-mastoid; glands easily removed; external carotid tied below lingual, and lateral wall of pharynx exposed; growth freely excised with scissors; bleeding trifling; no attempt to unite mucosa, but skin sutured; drain at lower end; rectal feeding for two days; good union. Three weeks later the glands behind left mastoid were removed. Five months later a small gland was excised from beneath anterior scar and other small ones felt on both sides; no local recurrence. Stress was laid upon the advantage of preliminary ligature of the external carotid over preliminary tracheotomy or use of cautery.

A. E. Barker had operated on three such cases by dividing mucosa and shelling out the growth with finger. Bleeding was arrested by sponge pressure or clamp forceps; usually no bleeding occurred. His patients were: Female, seventy-five, died eight months after; male, sixty-two, alive one year after; female, twenty, alive four years after.

Removal of pressure pouch of œsophagus.—**H. T. Butlin** (*Med.-Chir. Trans.*, April 25, 1893). Pouch typical in situation and symptoms. Long cut on anterior edge of left sterno-mastoid; omohyoid and superior thyroid artery divided, carotid sheath drawn aside; pouch separated easily from surrounding tissues, and, as it was cut away, opening into gullet was closed with fine silk sutures; rapid recovery. The only similar cases known to Butlin were one by Von Bergmann and two by Kocher. The operation was more than justified by the misery and frequent starvation caused by these pouches.

Œsophagotomy for simple stricture.—**F. S. Eve** (*Clin. Soc. Trans.*, October 14, 1892). Female, seventeen; stricture from nitric acid, twenty months; No. 7 Symonds' tube became fixed in

stricture. Left œsophagotomy as low as possible was done, but gullet had to be drawn up with forceps to reach tube. It was very movable, and a little more traction enabled Eve to divide the constriction with scissors. Wound in gullet closed by stitches not including mucosa. Good recovery. When seen two years after, No. 18 passed easily. Eve thinks the gullet has less tendency to contract than urethra, and suggests that external œsophagotomy might replace gastrotomy in cervical strictures. **Makins** believed that no recurrence of stricture had occurred in a case treated by Sir W. MacCormac with a kind of Holt's dilator.

12. Surgery of the abdomen.

Permeability of wall of strangulated gut to microbes.—**Arud** (*Ctblt. f. Bakt.*, xiii. Bd., 526) constricted intestines of rabbits with elastic rings. Micro-organisms (*e.g.*, *B. pyocyaneus*) previously introduced into bowel passed through wall as soon as stasis was induced.

Contusion of abdomen.—At the French Congress (*Sem. Méd.*, 1893) **Boiffin** and **Michaux** supported the view that expectant treatment was fraught with danger, and that it would be much better occasionally to operate for nothing than to run the risks of expectancy. Each quoted a case showing the results of the latter plan. **Zancarol**, on the other hand, quoted a case accompanied by grave collapse, in which expectancy was adopted and recovery ensued. There is no difficulty in finding such cases—the causes of shock being many. The abdomen is opened, lest a hollow viscus has been wounded or bleeding be going on; if neither be found it is closed again. Unfortunately, one cannot agree with the statement sometimes made that an exploratory laparotomy is not dangerous. Anything like a complete examination in a case such as one of **Michaux's**, in which a cask fell on a man's abdomen, would involve a considerable wound and probably great shock from exposure and handling of bowel.

The same controversy is waged with regard to *wounds of the abdomen*, but, apparently, the tide is turning against expectancy. The following are brilliant successes:—

Wound of the diaphragm.—**Severeanu** (*Sem. Méd.*, 1893, No. 21). Female stabbed with a knife in left axillary line at the level of the sixth dorsal vertebra. Was seen soon, and fracture of the sixth rib found. In wound lay recently-swallowed food. Wound of stomach diagnosed. **Severeanu** resected 7 cm. of sixth to eighth ribs. Wounded stomach protruded through wound in diaphragm; it was sutured and reduced; hole in diaphragm was closed and pleura drained. Uninterrupted recovery.

Gun-shot wound of abdomen.—**E. T. Milner** (*Manch. Med. Soc.*,

April 5, 1893). M., fourteen. A loaded pistol, $\frac{1}{4}$ in. bore, exploded in right trouser pocket; bullet entered midway between centre of Poupart's ligament and navel. Operation three hours later; bullet lay in second lumbar vertebra, between aorta and cava and duodenum and pancreas; it had traversed two coils of small gut, transverse colon, and meso-colon, dividing main arch of colica media vessels, and wounding third part of duodenum. Early hæmatemesis; and this with direction of wound led to median section above navel. Each perforation was closed with double row of silk Lembert's. No attempt made to dislodge bullet, but peritoneum over it pinched up and tied with ligature. Uninterrupted recovery. Temperature 100° F. twenty-four hours after operation; normal after.

Von Bramann reported to the German Congress a series of 7 gunshot wounds of abdomen, 6 perforating, which had occurred in his own practice. Naturally they form a valuable series. They are too many to quote; but two main inferences seem justified—(1) to operate, and (2) to do so as soon as possible.

Stomach—Gastrostomy for foreign body.—**Cant** (*Brit. Med. Journal*, 1892, i., 13) removed a razor felt near pylorus on sixth day after it had been swallowed by a melancholic woman, aged 68. She died somewhat unexpectedly on sixth, when an abscess in abdomen wall was found—the wound in stomach was healing satisfactorily. **D. Lowson** (*Ib.*, 116) removed a skewer, having a pipe in its ring, which was projecting through the thoracic wall of a lunatic, below eighth cartilage, encircled by slough the size of a crown. Lowson opened the stomach and pulled the skewer out. The patient recovered.

Loreta's operation.—**Percival** (*Brit. Med. Journal*, 1893, vii., 65) operated on M., nineteen, greatly emaciated from pyloric stricture due to healed ulcer of which pancreas had formed floor. The patient died on sixth day of broncho-pneumonia, probably septic; the wound did well.

Perforation of gastric ulcer.—**G. Barling** (*Brit. Med. Journal*, 1892, ii., 1011) showed a girl upon whom he had operated successfully for perforated gastric ulcer; no details given. **Haslam** (*Brit. Med. Journal*, 1893, i.) showed a specimen which he had sutured $5\frac{1}{2}$ hours after perforation; death occurred 45 hours later from purulent peritonitis. The perforation was completely occluded. **Murphy** (*Ib.*, 1892, ii., 1062) showed a similar specimen; death occurred on eleventh day after suture. **H. Gilford** (*Ib.*, 1893, i., 944) records a remarkable case. F., twenty, perforated, with marked collapse, after a heavy supper; lying on back at time. Very slight premonitory symptoms. Had rallied somewhat

in $10\frac{1}{2}$ hours ; temperature $101\cdot6$, pulse 140, small, hard ; abdomen distended, tender ; knees flexed ; had vomited once. Laparotomy was performed ; much fluid and food escaped ; stream from stomach guided finger through adhesions to ulcer near cardia, more on posterior than anterior wall. Finger passed in and search made for other ulcers—none found. Ulcer closed by silk Lembert's sutures, abdomen irrigated with warm creolin lotion, glass tube pushed up to ulcer. Discharge foul ; on eighth day, stomach contents escaped. On tenth, parotitis ; very ill, pulse 140. Fed by catheter passed through pylorus from small wound made in anterior surface of stomach. On fourteenth, septic temperature, diarrhœa and double pneumonia. Suspecting pus about stomach, Gilford enlarged opening for catheter and examined it digitally *from within* ; stomach hour-glass, bulging near lesser curve ; punctured, no pus ; but some in stomach next day. Improvement ; temperature $99\text{--}100$. Stomach and superficial wound closed, a fetid abscess near latter, being accidentally opened, cleaned and drained ; collapse and death on thirtieth day from the perforation. *Post-mortem*.—No general peritonitis ; stomach firmly adherent to abdominal wall and liver ; two abscesses in adhesions. Hour-glass shape due to healed ulcer. Three recent ulcers ; that which had perforated was small, $1\frac{1}{2}$ in. from cardia, and showed no sign of union.

Pylorectomy—**Roux** (*Sem. Méd.*, 1893, 151) had operated in five cases, with three successes—one unexpected, there being a large tumour of the small curvature with softened glands in relation. In another case he removed the major part of the posterior surface of the stomach for cancer, and 35 cm. of the colon ; the patient ate like an ordinary being after seven days, and lived eleven months. A third patient was in a state of inanition ; yet three months after operation she had picked up so much that she was shown at a society.

Doyen had done seven pylorectomies and five gastro-enterostomies with only one death. Whether he performs a pylorectomy or not, he divides the pylorus and closes it, because he thinks the coexistence of the pyloric with a new orifice may give rise to trouble.

Gastro-enterostomy: new method.—**Postnikow** (*Cent. für Ch.*, No. 49, 1892). The selected piece of gut should be attached to the anterior surface of stomach by line of non-penetrating stitches. Corresponding oval bits of serosa should be removed from each viscus immediately in front of this line ; posterior edges of raw surfaces should be attached to each other ; the exposed muscular and mucous layers should be tied firmly with silk so that they

will slough; the anterior edges of raw surfaces should be united and supported by a row of non-penetrating stitches. The method is said to be shorter, the viscera need not be washed out, and immediate faecal extravasation is prevented.

Roux (*Sem. Méd.*, 1893, 151) regarded the mortality as 50 per cent., and attributed it to postponement of operation till too late. In his first case he used first loop of gut he came to; it was 40 cm. above valve! In two cases he had seen reflux of duodenal contents, and one patient died in three weeks. He had lost five out of six patients in whom he had made an anterior opening in stomach, two out of eight with a posterior opening. **Doyen's** mortality had been very small. If he cannot do a pylorotomy, he clamps duodenum below growth, divides it and sews up ends. He always establishes a gastro-jejunal fistula, using the anterior surface of stomach, employing Halstead's suture (but with two rings of sero-muscular stitches), and getting great omentum out of the way by pushing it through a hole, torn in anterior wall of small sac, and fixing it there.

Three successful cases done with Senn's plates were recorded by **G. H. Hume** (*Brit. Med. Journal*, 1893, i., p. 842), **H. Allingham** (*Clin. Soc. Trans.*, 1893, April 14), and **M. Moullin** (discussion on above). Nevertheless, there seems to be a tendency to give up Senn's plates and bone tubes, as favouring regurgitation of intestinal contents, and to take to some method like Halstead's or Paul's ("Year-Book," 1893, p. 236). Further objections to the plates are that they are not always at hand, that their application is not so speedy when they slip about and require Lembert's stitches to make them safe, and that several cases are now known in which the aperture between the viscera has contracted so greatly as to be useless or has actually closed. In Paul's or Postnikow's method a piece is actually punched out of each viscus, and contraction is less likely.

Ileo-colostomy.—**R. Morison** (*Brit. Med. Journal*, 1893, i., p. 841) thus operated on male, 57, for irreducible ileocæcal intussusception due to malignant growth. Senn's plates employed with row of Lembert's stitches and large omental graft. Death three months later; fistula admitted thumb.

Typhlitis.—**F. Treves** read a paper before the Harveian Society on a series of cases of relapsing typhlitis treated by operation (*Brit. Med. Journal*, 1893, i., p. 835). He opens with remarks on the etiology of these inflammations in the cæcal region, based upon intra-vitam and post-mortem examination. He claims to have proved that stercoral ulcers of the cæcum may cause "typhlitis" by operations in which he found the appendix normal;

but we do not gather that the presence of a stercoral ulcer was demonstrated. His remarks on the connection between symptoms and lesions are interesting.

Relapsing typhlitis, Treves says, may be due to faecal mass lodged in cæcum (evidence?); but in 90 to 95 per cent. is due to appendix trouble. To justify operation, either (1) the attacks must have been very numerous, reducing patient to invalidism; or (2) increasing in frequency and severity; or (3) the last has placed life in jeopardy; or (4) the persistence of certain signs renders the presence of pus likely. Treves found pus in 9 of 14 cases, of all of which short accounts are given. All recovered well; pain and discomfort of operation not greater than in slight attack of typhlitis. Swollen appendix could generally be felt in quiescent period, and was cut upon directly—usually through incision at 90° to line from anterior spine to navel and two inches from spine. Adhesions to all pelvic organs were met and dealt with, raw surfaces being covered with peritoneum—the stump of appendix, either by a circular serous flap, or by suture to it of some other bit of peritoneum. Tube used only once for forty-eight hours on account of oozing. Twice Treves failed to remove the appendix.

G. Barling (*Brit. Med. Journal*, 1893, i., p. 838) presents an analysis of the cases (68) of typhlitis occurring in the General Hospital, Birmingham, during seven years. The results of his inquiry correspond generally with the statements which have been made, chiefly on the authority of Treves, in recent volumes of the "Year-Book." Barling states that the anterior band of the cæcum is a good guide to the appendix; some such guide is urgently needed.

M. Schede's views (*Dent. med. Woch.*, 1892, p. 521) are in entire accord with those of Treves.

Acute intestinal obstruction: Abdominal taxis—Recovery.—Fox and V. Barber (*Brit. Med. Journal*, 1892, ii., p. 790) report the case of F., eighteen, who had fairly acute obstruction, vomit being stercoraceous on fifth; temperature 99–99.6°; pulse, quick. Under poultices, opium and belladonna, and feeding by rectum, all symptoms subsided, but nothing passed. On ninth, chloroform was given, nothing to account for obstruction found. Inversion, three to four quarts of water injected per rectum, gentle thorough kneading of abdomen, succussion—up and down and from side to side, on her face and on her back—and finally another kneading. A faecal lump escaped with enema on tenth, a small stool after enema on eleventh, free action on twelfth, and rapid recovery. Such a result is doubtless very satisfactory,

when it is obtained; but one shudders at the thought of what might have happened from such treatment in the dark.

Intestinal obstruction in tubercular peritonitis of insidious origin is sufficiently rare to make the following paper by **Poppert** (*Münch. med. Woch.*, Aug. 23, 1892) worthy of note. F., eleven; father died of phthisis. Since pleurisy and diphtheria, fifteen months ago, had good health, but occasional abdominal pain. Sudden onset of acute pain, and complete obstruction; a dull resisting band three fingers wide crossed abdomen above navel; peristalsis visible. Laparotomy on fourth day; tubercular adhesive peritonitis; band was rolled up omentum; coils near cæcum empty; enterotomy of a distended coil; a litre of fæces escaped. Steady improvement; bowels acted on fifth day, fistula closed in six weeks. Excellent health a year later. Of 6 cases collected, 3 died after operation, and 1 after four months, of general tuberculosis.

Homans, in June, 1892, read a case of acute obstruction, in which colotomy was done, and tuberculous peritonitis found post-mortem.

Treatment of obstruction of large gut by temporary typhlotomy.—**H. Cripps** (*Brit. Med. Journal*, 1893, i., p. 396) advises, in all cases of obstruction of large gut, when injections have failed and when neither exact site nor cause can be diagnosed, an incision as for left inguinal colotomy—to be used first for exploration. In 3 out of 4 cases the sigmoid will be found distended, the obstruction being due to growth at upper end of rectum; in which case a sigmoid colotomy would be performed. Should sigmoid be collapsed and examination of descending colon near wound reveal no obstruction, left inguinal wound should be closed, and a similar incision be made over cæcum, which should be carefully stitched to parietal peritoneum, so as to leave a small area exposed. This should be punctured with trocar and cannula through rubber sheeting into which gas and fæces escape freely, and abdomen collapses more or less. One can then enlarge trocar opening somewhat, and fix edges to skin. If things right themselves, this opening closes, or can be closed; if not, it becomes permanent anus. Two very interesting cases are given in illustration of this practice.

Colectomy for cancer.—**H. Allingham** (*Clin. Soc. Trans.*, Mar. 10, 1893) operated on a patient who had had more or less obstruction for three months, almost complete for five weeks. Abdomen greatly distended; no tumour in rectum. Incision as for inguinal colotomy; malignant stricture of sigmoid found and drawn out with fifteen inches of gut, fixed and opened. It had

been twisted, and bowel above and below growth was equally distended. After ten days, $14\frac{1}{2}$ ounces of growth and gut were removed, and spiked clamp left on thirty-six hours; there was no bleeding, all was healed in fourteen days, and no prolapse ensued. He did not attempt enterorrhaphy owing to state of patient.

Intussusception of sigmoid flexure removed through anus.—**A. E. Barker** (*Brit. Med. Journal*, 1892, vii., p. 1,226) states that the first case of the kind which he thus treated, in June, 1886, is still well. The present case, F., fifty-six, had twice passed blood freely two and a-half years ago, and had had symptoms of intussusception with free bleeding for a fortnight; fairly healthy; pulse, 80; abdomen full; coils of bowels faintly seen. An intussusception with a malignant apex felt two inches from anus. Barker stretched anus widely, and drew down intussusception four to five inches below anus; passed large tube and evacuated much gas; grasped mass with finger up lumen and thumb outside, passed a short transversely running silk stitch through all coats of bowel and tied it tightly, then cut transversely through the bowel below the ligature, and saw that no small gut lay between the serous surfaces; and, proceeding thus, completely united the two pieces of bowel about one inch above the growth, and removed the latter. The patient recovered well: passed flatus from the first day, had slight pain and soreness in left iliac fossa for a few days, and considerable discharge from bowel for first two days, bowels acted on fourth day. Highest temperature, $100\cdot8^{\circ}$. Left hospital on eighteenth day.

H. S. Symonds (*Brit. Med. Journal*, 1893, i., 638).—M., sixty, eighteen months' history of loss of flesh, flatulence, colic, occasional vomiting and constipation, attacks of diarrhoea, and, finally, mucous and bloody stools. A tumour had been felt in rectum a year before operation; it finally protruded through anus and caused much pain. The protruding apex consisted of new growth extending two inches up lumen. The mass was irreducible; so five transversely running stitches were so inserted as to surround the whole circumference of the intussusception above the growth, which was then cut off without bleeding. The mucous membrane was sewn over the line of section, and the intussusception was reduced with a tube through the lumen. Patient recovered well; but three weeks later obstruction again set in, and patient died during an attempt to afford relief by a sigmoid colotomy above the line of removal of the growth. *Post-mortem.*—The sigmoid had been opened just *below* the site of excision, where it was puckered and considerably narrowed, but admitted finger. No recurrence; appearances attributed (and probably rightly) to silk

stitches. The obstruction was due to a second malignant stricture near hepatic flexure.

Enterectomy and enterorrhaphy are daily becoming more common, and apparently more and more successful, as might be expected.

the *treatment of gangrenous intestine in hernia*, quoting a case of

Kendal Franks (*Med.-Chir. Trans.*, March 28, 1893) dealt with umbilical hernia in which he had resected $9\frac{1}{4}$ inches of small gut and united the ends by Gély's suture at once (see "Year-Book," 1893, p. 240). Franks regarded this as ideal treatment of gangrenous gut, and held that the establishment of an artificial anus should be quite exceptional. In 220 recorded cases of resection the mortality had been 48 per cent.; while the mortality from the establishment of an artificial anus was 80·7 per cent., of secondary resection and suture 38 per cent., and after use of Dupuytren's enterotoma 7·3 per cent.

J. Hutchinson, Jun.—F., forty, strangulation three days, gut gangrenous, commencing peritonitis. Twelve cm. of gut removed through a median incision, the sections being made two inches from the nipped portion. He united the ends by a continuous suture of mucous membrane and Lembert's suture for the rest of the wall, removed sac, and thus effected a radical cure. Rapid recovery. Hutchinson thought the mid-line should be used in these cases for the resection, as also did Franks and Barker, the latter recommending that all gangrenous parts should be cut away at the hernial wound and the gut ends ligatured before they were drawn through the abdomen. Hutchinson thought the sections should be transverse; Franks preferred oblique, most being removed from the convex border. Franks would resect doubtful gut. With regard to Franks' statistics, Barker suggested that the two groups were not comparable—the cases of artificial anus being generally desperate, those of enterorrhaphy more favourable. **Bowlby** stated that the mortality after strangulated hernia of all kinds in the three largest London hospitals during the past ten years had been 44 per cent. According to Franks, the results after enterectomy were hardly more serious. He and T. Smith agreed that the term "gangrenous" had a different meaning to different operators, some of whom had frequently performed resection, although only forty-two cases of gangrene had occurred in ten years at St. Bartholomew's.

For femoral artificial anus.—**Stanley Boyd** (*Med.-Chir. Trans.*, 1893) operated by resecting the ends and uniting them by Maunsell's method ("Year-Book," 1893, p. 204), the woman making an uninterrupted recovery. The suture was done through the wound in the groin, the bowel being subsequently reduced

without difficulty. Boyd recommended the method as easy, quick, and apparently reliable.

For stricture after acute intussusception, developing six weeks after passage of a slough and ending in three months in almost complete obstruction with fæcal vomiting, **Haasler** (*Cent. f. Ch.*, 1893, No. 30) resected the cicatrix and sutured the ends; the boy (fourteen years) recovered well. **Braun** recommended entero-anastomosis instead of resection in such cases, as being easier and less severe; he had adopted it with brilliant results.

For cancer, **Haasler** (*ibid.*), in F., forty-three, removed 15 cm. of ileum with mesentery and involved glands, the valve, ascending colon, and half-transverse colon, which was matted on to valve. Primary suture. No recurrence after a year; patient 36 lbs. heavier.

For irreducible cæcal hernia.—**Bruce Clarke** (*Clin. Soc.*, May 12, 1893) showed a boy, after excision a year earlier of cæcum and appendix, with 2 inches of large and 2 inches of small gut. Testis was so firmly adherent to vermiform appendix that it also was removed. Operation was done for irreducible congenital hernia; the radical cure appeared perfect. The cut ends were united by double row of continuous suture; no bad symptoms; up in less than three weeks.

On the *Surgery of the Liver and Gall-bladder*, **Mayo Robson** gave an excellent address at the British Medical Association Meeting in 1892 (*Brit. Med. Journal*, 1893, i., 78).

Hydatids: Complete removal of hydatid cysts of liver.—**Bruce Clarke** (*Brit. Med. Journal*, 1893, i., 690) gives three cases of hydatid cyst treated by incision over the swelling, puncture of the cyst and removal of most of its fluid contents, incision of the cyst, removal of daughter cysts and lining membrane, suture of edges of wound in liver to wound in abdominal wall, and drainage of the cavity in the liver, which slowly closed.

A hydatid of the kidney was similarly treated. This is what the French call “marsupialising” cysts. **Villar** (*Sem. Méd.*, 1893, 151) did laparotomy, removed three mesenteric cysts, as suggested by C. J. Bond (“Year-Book,” 1891, p. 227), and marsupialised a hepatic and a recto-vesical cyst. Perfect cure. **Demons** had treated successfully one case in the same way as Villar. **Morchet** had marsupialised a cyst of the spleen, the wound healing in a few months.

Liver: Hepatic abscess; rupture into peritoneum.—**J. W. Hulke** (*Trans. Med.-Chir. Soc.*, Nov. 22, 1893) described a case of large liver abscess which, having emptied itself through the lung, burst three months later into the peritoneum and caused extreme

collapse. On the second day after, Hulke washed out a very large quantity of pus from peritoneum. Rapid improvement and recovery followed, so that patient was able to resume his occupation. Later, an abscess again collected, was opened, and was still being treated. But the case illustrated the value of prompt flushing of the peritoneum under such circumstances.

Moore (*Indian Med. Gaz.*, June, 1893).—M., forty. Pain and swelling in right side, fever and asthenia for six months; sudden severe pain, rigors and fever, followed by collapse, three weeks ago; distension of abdomen and inability to eat since. On admission after journey extreme emaciation, imperceptible pulse, temperature subnormal. Abdomen swollen, right side doughy to groin, right hypochondrium and loin red and angry-looking. Incision below ribs let out quantities of foul, greenish pus; the scarred and roughened surface of liver was then seen and deeply incised, when much pus again escaped from a cavity occupying the whole right lobe. Cavities were washed out and drained. Patient was very ill for days, with frequent vomiting and collapse, but he began to take food by mouth on fifth, and was sitting up on twelfth day. His friends then gave him a huge meal; collapse, vomiting, and diarrhoea followed, and he died on fourteenth day. No post-mortem.

Suppurating hydatid cyst of liver with peritonitis; laparotomy; cure.—**Reynier** (Paris).—M., fifty. The cyst was twice punctured and, on the second occasion, injected with 100 grm. of 1 in 1000 perchloride of mercury. Temperature rose with rigors the same evening, but all symptoms subsided and the patient went out. He returned in three weeks with the tumour larger than ever, and containing pus, as shown by puncture, soon after which peritonitis appeared, and Reynier was called in. He operated, found the peritoneum full of turbid fluid, and carefully sponged out the cavity; opened the abscess, which had a wall 1 cm. thick, sutured the opening to the abdominal wound, and drained. Recovery.

Reynier says this case shows once more that laparotomy may succeed with diffuse purulent peritonitis; also how dangerous is puncture of suppurating hydatid cysts. Even though 1 cm. thick, the wall had not closed up behind the trocar, and a fistula remained. In puncturing we do not know exactly what we do; laparotomy should be the operation of election.

Removal of tumour of liver.—**Von Bergmann** (*Cent. f. Ch.*, 1893, No. 30, p. 68) reported a case of very mobile growth which could be pushed from the umbilicus, as it were, into the liver, dis-

appearing for hours. A leather-brown tumour was easily drawn out ; pedicle to liver, 10 cm. long and 4 cm. broad ; sutures passed through it tore out. It was therefore cut through, chief vessels tied ; bleeding from others arrested by pressure with sterilised gauze. The wound was filled with iodoform gauze (von Eiselsberg), which was removed between third and ninth days. The growth was a tubular adenoma.

Removal of pedunculated gumma.—Schmidt (*D. med. Woch.*, Feb. 23, 1893).—F., thirty-seven. Abdominal pain, wasting and constipation six to seven months ; tumour felt one month. On admission, tumour size of hen's egg, hard, cylindrical, with irregular surface ; moving with respiration, easily pushed from one hypochondrium to the other. Diagnosis : mass, possibly tubercular, connected with colon. Found to be a pedunculated mass attached to left lobe of liver ; it was brought outside, elastic ligature applied, mass cut off, and stump treated extra-peritoneally. Four arteries or veins were tied, and general oozing checked with cautery. The granulating surface was covered with Thiersch's grafts three weeks later.

Non-parasitic cyst of liver.—Müller (German Congress, *Cent.f. Ch.*, 1893, No. 30).—F., fifty-nine. Tumour 10 years ; symptoms four years ; frequency of micturition alternating with retention, pain in back, abdominal cramp, fainting ; at last she became very ill, probably from hæmorrhage into cyst. The tumour filled whole abdomen and part of pelvis, and was regarded as ovarian. At operation a thick hollow pedicle was found connecting it to anterior and inferior surfaces of liver. Temporary ligature of gauze put round it, more than 6 litres of chocolate fluid and clot evacuated, two-thirds of cyst cut away and rest fixed in wound. Hæmorrhage very free from cyst wall in spite of ligature ; arrested by suture and cautery. Healed in four months ; cyst wall left partly sloughed, and was partly removed by repeated operations with free bleeding. Section of wall showed liver structure and cystic dilatation of ducts.

Schmidt, in the discussion, mentioned a case of central adenoma in F., fifty ; cachectic, emaciated, with abdominal tumour reaching from ribs to right iliac fossa and to below navel ; smooth but for a large boss near navel. The boss was exposed, liver sutured to abdominal wall, and incised to depth of 3–4 cm., when a cavity containing soft bile-stained granulation masses was entered. They were removed by sharp spoon with sharp bleeding, wall of firm liver tissue being left. Cavity plugged with iodoform gauze, wound closed in two to three months, and liver edge came to coincide with costal margin, and remains so after six years.

Microscopically, fattily degenerated adenoma tissue ; the general enlargement was probably due to chronic inflammation.

Bardleben had removed a sarcoma of abdominal wall which infiltrated the liver to the extent of a man's fist by a wedge excision, with subsequent suture of the liver edges ; it healed well, and the patient remains free from recurrence, two years after. **Benno Schmidt** had removed a pedunculated gumma by the technique which **von Bergmann** had employed. **König** recommended the plan of stripping up the serosa from the liver, enucleating the growth, arresting bleeding with the cautery, and sewing the serosa over the eschar. Smaller tumours he had successfully removed four or five times by wedge excision and subsequent suture. **Von Bergmann** reiterated that he had tried sutures in vain.

Spleen : Ruptured spleen ; splenectomy.—**Riegner** (*Berl. klin. Woch.*, Feb. 20, 1893).—M., fourteen, fell from height, striking abdomen ; abrasions on left side. Next day, increasing pallor, abdominal distension, and rapid pulse ; some dulness in epigastrium. Ruptured liver or spleen diagnosed. As boy was getting worse, abdomen was opened in mid-line ; incision prolonged to right, but liver not torn ; bowels turned out ; pieces of splenic tissue found among clots ; cut carried into left hypochondrium ; spleen found divided into two pieces, which were removed. Saline infusion practised. Slow recovery. After a few days gangrene of toes and parts of left leg necessitated amputation through thigh four weeks after splenectomy. The patient got up in seventh week.

Lymphatic glands enlarged three weeks after splenectomy, but were subsiding again after seven months. Interesting observations on the blood are contained in the paper.

Battle (*Clin. Soc. Trans.*, April 14, 1893) records a similar case in M., forty, who walked to hospital three hours after having fallen fifteen feet ; moderate shock ; fractured tenth left rib. On second day signs of internal hæmorrhage ; four pints of saline infused with much benefit. Laparotomy ; 75 oz. of blood-clot removed. Spleen torn and its chief vessels tied. Peritoneum irrigated ; five pints of saline infused with great benefit. Did well for two days ; then localised peritonitis and death on 6th day.

Splenectomy for axial rotation of wandering spleen.—**Bland Sutton** (*Clin. Soc. Trans.*, Dec. 9, 1892).—F., twenty-two, one child, discovered a swelling in left half of belly, very mobile, like hydronephrosis of a movable kidney. In March had attack of acute pain in tumour, vomiting and diarrhœa. Exploratory incision ; spleen with twisted pedicle ; untwisted and replaced in

hypochondrium. Rapid convalescence; belt applied. Spleen was in proper place and of normal size after six weeks. On July 7th another similar attack, with hæmorrhage from vagina, and lump reappeared. On different days it was found in right and left iliac fossæ and in pelvis. Splenectomy through old median scar on sixth day after admission. Pedicle completely twisted three times. Weight of spleen 16 oz.; texture normal. Recovery.

Splenectomy for hypertrophied spleen.—**Treub** (*Union Méd.*, July 13, 1893).—F., forty-eight. Symptoms seven years; abdominal tumour, supposed to be of left ovary, and adherent to front of uterus, found. Laparotomy; tumour adherent to abdominal wall, intestines and uterus—proved to be the spleen. Recovery in three weeks; still quite well a year later. No leukæmia or other abnormality of blood before or after operation.

L. Tait (*Brit. Med. Journal*, 1893, i., 70) removed a spleen weighing 13 lb. from F., thirty-six. Symptoms three years; one white to six red cells; no hæmorrhages except rather free menses; no ague. No shock after operation; but after some hours, stitch-holes in abdominal walls began to bleed, and she slowly died forty-eight hours after operation.

Pancreas: Injury to the pancreas a cause of effusions into the lesser peritoneal cavity.—**Jordan Lloyd** (*Brit. Med. Journal*, 1892, ii., 1051) gives two cases from his own practice which most people would have styled "pancreatic cysts." Lloyd does not deny that true cysts of the pancreas may occur; he supposes that they do. But the very frequent relation of these fluid collections to injury lead Lloyd to suspect that they generally result from hæmorrhage into the lesser sac—not necessarily from the pancreas. It would seem that, whilst Lloyd has raised a reasonable doubt as to the propriety of terming these collections "cysts of the pancreas," he has not proved that the pancreas was injured in either of the original cases he brings forward. He regards early median incision and drainage as the proper treatment.

P. Swain (*Brit. Med. Journal*, 1891, i., 456) gives a case—M., thirty-eight—in which there was no history of injury, and the history led him to suppose that blocking of the pancreatic duct and formation of a retention cyst, which later broke into lesser sac, was a more likely explanation than that of traumatic hæmorrhage into this sac.

ORTHOPÆDIC SURGERY.

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1. The treatment of severe club-foot.

Since the last edition of the "Year-Book," surgeons, both general and orthopædic, have been busily engaged, as evidenced by the papers referred to below, in writing on and discussing the question of the treatment of severe congenital club-foot. Slight cases have received little or no attention. It is admitted by all that almost any of the recognised orthopædic methods, if carefully, systematically, and intelligently carried out for sufficiently long periods, suffice to completely cure these; and it also seems clear, from the perusal of the various papers that have been published, that there is no royal road to the cure of inveterate cases. Relapses after all methods are only too common, and are almost certain to occur unless the patient is in such a position that a very prolonged and systematic after-treatment can be rigidly carried out. On one point all are agreed: namely, that the treatment cannot be begun too early—a point of importance, since the surgeon is too often told by the parents that they have been advised to delay active treatment till the child was some months old. The dictum of Professor Sayre—that treatment should be begun as soon as the infant is washed—is an excellent one to bear in mind, and is one which is enforced by most of the writers mentioned. Some few, as Fisher (*Lancet*, May 27, 1893), still think that immediate rectification after tenotomy is unadvisable; but this opinion is certainly not held by the majority. Perhaps the most interesting points connected with the subject bear upon the question of forcible rectification, Phelps' open incision, the subcutaneous division of all the soft parts in the sole, and the resection of the tarsal bones.

Delore (*Rev. d'Orthopédie*, March and May, 1893) has come to the conclusion that in forcible rectification with the tarsoclast we have the best and most expeditious method of treatment. Previous to the application of the instrument he advises division of all resisting tendons and aponeuroses. He describes a new form

of osteoclast. It consists of a strong board, 50 centimètres long, 30 centimètres wide. To the extremities of the board are placed two cubical blocks of wood, 7 centimètres in all their dimensions, their upper surface slightly concave and well padded. These can be separated or approximated by a suitable mechanism. On one the heel and on the other the front part of the foot is placed. A stout lever is arranged to work longitudinally over the interval between the two blocks. To it is attached a well-padded cushion, which presses on the middle of the convexity of the foot. The short arm of the lever is fixed by a suitable arrangement to a steel bar behind the blocks; the long arm, by means of a screw, can be so acted upon as to bring pressure to bear vertically from above downwards on the convex border of the foot. The apparatus resembles Rédard's, differing from it in that the pressure is made vertically instead of laterally. For overcoming the equinus after rectification of the varus, the heel is placed in the interval between the blocks, the plantar surface of the foot rests on one block, the back part of the leg on the other. When the lever is put into action it flexes the foot and presses the astragalus back into its socket. Delore considers the instrument meets all the requirements of a good tarsoclast. The reporter has employed forcible rectification by means of Rédard's tarsoclast at St. Bartholomew's in several inveterate cases during the past year, but regrets that he has not met with the like excellent results which he was led to expect from the published accounts of forcible instrumental rectification. Theoretically, the method would appear to be lacking in precision; but the results in inveterate cases are so frequently discouraging that it deserves a full trial. Delore very properly insists on the importance of overcorrecting both the varus and the equinus; as he truly says, if the foot is merely brought to a right angle, and any amount of varus is left, a relapse is almost sure, sooner or later, to occur. After forcible rectification, he considers there is less risk of a relapse than after other methods; but even when this has been employed, the long subsequent use of orthopædic apparatus he admits to be necessary.

Robert Jones (*Lancet*, Jan. 7, 1893) practises rectification by Thomas's wrench. By this instrument, he says, the most intractable cases are materially benefited, and if properly used there is no occasion for slough or abrasion. He has treated over thirty cases of the severest type, varying in age from six to twenty-three, with the most encouraging results. The secret of success lies in the frequent renewal of the efforts, before the structures have had sufficient time to recover from the strain.

Nicholas Grattan (*Trans. Amer. Orthop. Assoc.*, 1892) employs for rectifying the foot his screw-clamp invented for the cure of knock-knee. He fractures the tibia quite close to the ankle-joint, and again half-way up the limb; and by then rotating the foot, gets it everted, and, by means of the fracture close to the ankle-joint, the sole of the foot flat on the ground. He claims to have given nearly all his patients good and useful feet. In less severe cases several tarsi have been crushed and torn with the instrument with the best results. His retentive apparatus consists of a piece of hoop-iron fastened by adhesive plaster to the posterior aspect of the limb and extending underneath the foot.

Lane (*Lancet*, Aug. 19, 1893) defends his operation of the subcutaneous division of all the soft structures in the sole of the foot and behind the internal malleolus. He declares that there are only two methods of satisfactorily dealing with an inveterate club-foot in infancy—one by the open method of Phelps, and the other by his own subcutaneous operation. He has hastened the healing of the wound in the open method and prevented the subsequent extensive cicatrization by changing the dressings on the second day, and by applying a large skin-graft over the whole of the raw surface, taking care to make the graft large enough to allow for the shrinkage which always takes place in it. Notwithstanding, he says, that the wound heals rapidly, and the foot remains flat, the result, when the patient begins to walk, is very unsatisfactory, since there is a total loss of continuity of all the soft parts in the sole of the foot. Lane has never obtained by this method a result with which he was satisfied, nor has he seen one. In his subcutaneous operation, an Esmarch's bandage having been applied above the knee, he divides, with a strong, long-bladed, sharp-pointed tenotomy-knife, everything beneath the skin that opposes moderate abduction of the foot upon the astragalus—namely, the whole of the plantar fascia, part of the internal, lateral, and annular ligaments, the calcaneo scaphoid and the long and short plantar ligaments, the tibialis anticus, and all the tendons, vessels, and nerves in the sole of the foot. Many punctures in the skin have to be made. If any gape they are sewn up, otherwise arterial blood spurts through them on the removal of the tourniquet. He next subcutaneously divides the tendo Achillis, and if the foot does not become square, all the soft parts behind the inner ankle and the posterior ligament of the ankle-joint. The peronei and the extensors are the only soft parts spared. Even then, in bad cases, the skin for a time affords an obstacle to the foot being retained in a good position, and necessitates plaster of Paris at intervals of three or four

weeks. The foot and leg are secured on a back splint with a foot-piece whose inner margin forms an angle of 25° with the vertical. Lane claims for his method a useful foot on which the patient can walk gracefully. The method is an heroic extension of the operation of Professor Buchanan, who divides all the soft structures on the inner side of the sole only, sparing those on the outer side and behind the internal malleolus. The operation does not commend itself to the reporter, and he has met with relapsed cases after it in the orthopædic department at St. Bartholomew's. In these a transverse gap across the sole existed, at the bottom of which the bones of the tarsus, apparently uncovered by soft parts except the integuments, could be felt. It is clear, therefore, that all cases are not satisfactory. It would be interesting to know the condition of the feet in Lane's cases a few years subsequently.

Owen (*Lancet*, Dec., 1892) is a strong advocate for Phelps's open incision. In addition to the objection pointed out above by Lane, Walsham thinks that there is a danger of subsequent relapses, inasmuch that after Phelps's method a gap is left on the inside of the foot which is filled up by fibrous tissue, and this is likely to contract subsequently and reproduce the deformity. The bones, which in these severe cases are at fault, are left untouched. He has found in practice such to be the case, notwithstanding the employment of recognised after-methods for preventing it.

Gerard Marchand (*Rev. d'Orthopédie*, July, 1893) reports a case in which Phelps's incision failed to rectify the foot, and he had to remove the scaphoid, the cuboid, and the cuneiform bones; the result was then, he says, perfect.

Ridlon (*Trans. Amer. Orthop. Assoc.*, 1892) relates a case in which excision of the astragalus, after Phelps's operation, had to be performed. It was found that not only was there the usual twist in the astragalus, but the surface which articulates with the tibia was flat and looked backwards and upwards; the posterior portion of the tibia articulated with the os calcis. Since the astragalectomy there had been no relapse. Ridlon asks how are we to determine what operation and how many operations may be necessary in a given case? In the above case, when six weeks old, manual stretching and Barwell's brace were faithfully carried out. When old enough to walk, Judson's brace and then successively plaster of Paris, wrenching after Thomas's method, subcutaneous tenotomy in sole and heel, then stretching after Shaffer's method were employed; but at two and a half years the deformity was as bad as ever. Phelps's operation was then performed and Judson's brace again employed, and finally, after

a year and a half astragalectomy became necessary. How many surgeons can honestly say they have not met with like cases?

The vexed questions of astragalectomy, cuneiform resection, etc., still excite attention. Though some still maintain that these operations are unjustifiable, the majority hold that they are absolutely necessary for the severest grades of the deformity and where other methods have failed. Successful cases of both operations and modifications of them will be found in the papers here mentioned. **Bradford** (*Trans. Amer. Orthop. Assoc.*, 1892) advises linear osteotomy of the neck of the astragalus and anterior end of the os calcis, or the removal of a wedge-shaped piece from these parts of the bones. In the opening discussion at the British Medical Association, **Walsham** (*Brit. Med. Journal*, Oct. 1, 1892) summarises his conclusions on the treatment of such severe cases as follows: (1) In severe cases in the infant our aim should be to act by gradual pressure on the bones rather than to stretch or divide the soft structures on the inner side of the foot. (2) That to accomplish this object the varus defects must not be too quickly overcome. (3) When the varus is cured the foot should be carried after division of the tendo Achillis beyond the right angle. (4) When the foot, after the division of the tendon, will not come up to or beyond the right angle, it is the result, not, as a rule, of contraction of the posterior ligaments, nor of the astragalus being partially tilted out of its socket, but of a downward deflection of the astragaloid neck. (5) That this deflection is best overcome by slow mechanical pressure acting on the bone rather than by division of the posterior ligaments or soft structures in the sole. (6) That in exceptional cases, even in the infant, we can prognosticate from the first that the case will not be cured without a bone operation. (7) That for such, but only after all gentle means have been tried, astragalectomy, with, if necessary, removal of other portions of the tarsus, is the best operation.

New or modified correcting and retentive apparatus are described by Ling Taylor, Townsend, Levy of Copenhagen, and others.

2. The treatment of acquired talipes.

Forcible rectification in acquired talipes.—**O'Neill** (*Brit. Med. Journal*, March 4, 1893) reports three cases of acquired talipes of long standing successfully treated by forcible rectification with Thomas's wrench. Previous to the wrenching, division of all contracted bands was performed. Massage and instruments were subsequently employed.

Ankylosis of the ankle-joint in the treatment of paralytic club-

foot.—**Schwartz** and **Rieffel** (*Rev. d'Orthopédie*, Jan. and March, 1893) publish three cases of paralytic club-foot treated by the production of ankylosis (arthrodesis) of the ankle-joint, and discuss at length the methods of performing the operation and the indications for and against its employment. Of the three ways that have been proposed of exposing the ankle-joint, the anterior, the internal, and the external, they prefer the external method, although they admit good results are to be obtained by the internal. They justly condemn the division of the strong internal lateral ligament recommended by Roersch as weakening the ankle, the ankylosis in this situation being generally fibrous, not osseous. They proceed as follows:—The tendo Achillis is first divided, either by subcutaneous or open incision. This procedure not only facilitates the correction of the deformity, but aids the dislocation of the foot inwards, and renders unnecessary the division and subsequent suture of the peronei. An incision 7 or 8 centimètres long is made along the posterior border of the fibula under the apex of the malleolus, and then obliquely inwards and forwards as far as the medio-tarsal joint. The peronei being drawn aside, the periosteum and ligaments are detached from the external malleolus. With a little force the foot can be dislocated outwards, and the ankle-joint is fully exposed. The cartilages are removed by means of Volkmann's spoon, Le Gouest's gouge, and resection knives. The authors have not found it necessary to destroy the synovial membrane, the secretion of which, it has been affirmed, offers an obstacle to ossification. The osseous projections round the head of the astragalus may have to be chiselled away in order to permit of the complete return of the astragalus into its socket. They reject all kinds of pegging, wiring, etc., for fixing the denuded bones in apposition, and merely suture the fibrous tissues and skin, and trust to plaster of Paris for immobilising the parts. They insist upon the importance of fixing the foot at a right angle or a little more, to the leg. The various methods that have been advocated for producing bony ankylosis are discarded, the authors believing that all are futile and only complicate the operation; they are content with a firm fibrous ankylosis. They divide paralytic club-foot into two classes: the completely paralysed, in which the foot may be either flail-like or fixed, and the incompletely paralysed, in which the deformity may be reducible or irreducible. It is important to determine which class of cases will be benefited by instruments; which by an ankylosis of the ankle-joint. In deciding this point, the age of the patient, his social condition, the duration of the lesion, and the condition of the other joints and of the muscles of

the limb must be taken into consideration. The operation may be said to be indicated when the paralysis is complete, the foot flail-like, and the patient a labourer, or one in whom for any reason the wearing or obtaining of an instrument is impossible. It is also indicated when the deformity is irreducible, and when it has resisted multiple tenotomies and orthopædic appliances.

3. The treatment of flat-foot.

Forcible over-rectification in the treatment of rigid flat-foot.—

Royal Whitman (*Annals of Surgery*, Jan., 1893) strongly advocates forcible over-rectification, a method which was first described by Willett in the "St. Bartholomew's Hospital Reports," and has repeatedly been referred to in the "Year-Book." The foot, with the patient under an anæsthetic, is wrenched into a position of extension and adduction, and thus confined in a plaster of Paris bandage. The division of the tendo Achillis as recommended by Krause is quite unnecessary, certainly in the majority of cases.

Treatment of flat-foot by internal cuneiform tarsectomy.—

Schwartz (*Rev. d'Orthopédie*, July, 1893) has found forcible rectification successful, except in three cases of a very severe grade, and in these he performed what he calls internal cuneiform tarsectomy. This resembles Ogston's operation, but is more extensive. An incision 4 or 5 centimètres long is made down to the bone along the inner border of the foot from a point a centimètre in front of the internal malleolus to the first cuneiform bone. The soft parts are retracted, and the bones are denuded of periosteum on the dorsal and plantar surface. With a chisel and mallet a wedge of bone composed of all the scaphoid and the anterior part of the astragalus is taken away. The wedge is wider below than above. The remains of the astragalus and the internal cuneiform are then sutured by silver wire. The wound is partially closed, dressed antiseptically, and plaster of Paris applied. Good results are claimed.

4. The treatment of genu valgum.

Oblique osteotomy of the tibia.—In some cases of knock-knee the tibia is more at fault than the femur. For such **Broca** (*Rev. d'Orthopédie*, July, 1893) makes an oblique incision through the tibia, and glides the inferior fragment on the upper till the knock-knee is corrected. This method has been practised by others and is not without danger. The anterior tibial artery where it passes between the bones has been wounded, necessitating amputation.

5. The treatment of congenital dislocation of the hip by Hoffa's method.

Kirmisson (*Rev. d'Orthopédie*, May, 1892) gives his experience

of this method. Out of 6 cases operated on, 1 died of peritonitis from fracture of the pelvis; in 1 suppuration and almost complete ankylosis ensued; in 1 the head would not stay in the new cavity formed for it, and there remained 4 centimètres of shortening against 6 before the operation; in 2 sufficient length of time had not elapsed to speak definitely as to the result, but six months after the operation the head remained reduced and in a good position; in 1 the operation was quite successful. Kirrison thinks that the operation should not be done after the age of seven, and regards the age of between four and six as the most suitable period for operation. When the bone is hard he proposes to use the trephine for making a new acetabulum. Although the results he has yet obtained are not brilliant, he considers the operation logical and rational, and intends giving it further trial.

Denucé (*Rev. d'Orthopédie*, March, 1893) relates a case of a girl aged six on whom he operated by Hoffa's method for congenital dislocation of the left hip. The condyloid cavity was found at the operation of triangular form, and admitted the tip of the index finger. The neck of the femur was absent. Having enlarged the acetabulum, the head was placed therein, and showed no tendency to escape. The lordosis entirely disappeared. The pelvis was horizontal, the lumbar spine vertical; a slight dorsal curve remained. The leg regained much of its muscular power, and the shortening was much diminished. The child walked well.

6. Shortening of elongated ligaments and tendons by transplantation of bone.

Walsham (*Lancet*, Feb. 18, 1893); Greig Smith (*ibid.*).—Walsham describes two cases in which he shortened an elongated patellar ligament by transplantation of the tubercle of the tibia. The patients complained of the patella slipping suddenly from time to time over the condyles, causing them to fall. The falls were so frequent and unexpected that one patient had to give up her employment as a housemaid. The ligament of the patella was found elongated, so that with the knee bent to an angle of 90° the patella could be pushed on to the front of the condyles, the anterior surface looking upwards instead of forwards. The elongated ligament was shortened by transplanting the tubercle of the tibia about one inch lower down the shaft, where it was pegged to the bone. The wound healed by the first intention. The result was excellent. The patella could no longer be dislocated, and the joint was normal in appearance and function. Shaffer, of New York, has described similar cases of elongation of the ligament which were treated by apparatus, but no operation was performed. The results were not very satisfactory. Greig Smith, of

Bristol, has also met with a like case. In this he shortened the ligament by means of a herring-stitch suture. Walsham has also transplanted the posterior tubercle of the os calcis with the tendo Achillis attached to overcome the elongation of the calf muscles in paralytic talipes calcaneus. These operations appear likely to be useful in elongated ligaments and tendons in other situations.

7. The treatment of lateral curvature.

Treatment by pressure correction, Bradford and Brackett (Boston Med. and Surg. Journal, May 11, 1893).

This subject has been frequently alluded to in former "Year-Books," and the methods of Lorenz, Beeley, Rédard, Hoffa, and others described. Bradford and Brackett employ a modification of Schede's apparatus. It consists of two uprights with lateral bars for fixing the pelvis, head-strap and pulley arrangement for extending the spine, and variously-arranged lateral pressure plates for correcting forcibly the deviation. They also describe a correcting appliance for use in the recumbent position. The objects of their treatment are to increase the flexibility of the parts of the spine where flexibility is abnormally limited, and to secure the maintenance of an improved attitude by the use of retentive apparatus until the improved attitude has, by the alteration in the structure of the tissues, become habitual. For the latter purpose they apply a plaster of Paris jacket to the patient in the corrected attitude.

8. The treatment of spasmodic torticollis.

Gardner and Ellis (*Australian Med. Journal*, 1893) publish three cases of neurectomy of the spinal accessory and posterior cervical nerves for the above affection; and Anderson and Johnson Smith each publish a successful case (*Lancet*, April 22, 1893). Gardner and Ellis give a short *résumé* of the cases reported by other surgeons (*see* "Year-Book," 1893), and lay down the following considerations regarding the operation:—

(1) The operation on the spinal accessory nerve should precede by a considerable interval the difficult operation on the cervical nerves, for two reasons—(a) because the milder operation has been known to be successful even in cases in which the movement occurred in muscles not supplied by the spinal accessory nerve; and (b) because the trapezius being completely paralysed after neurectomy of the spinal accessory nerve, time is also given for a more complete study of the muscles involved in the spasm, and in this way unnecessary operations, with their risk and resulting scars, may be avoided.

(2) If the sterno-mastoid is involved in the spasm, the spinal

accessory nerve should be cut down upon anterior to that muscle ; but if the trapezius alone is involved, the nerve should be sought for by an incision along the posterior border. In neither case need the incision, if properly placed, exceed two inches in length.

(3) No injury to the patient will arise from the paralysis of the muscle from the point of view of function. From an æsthetic point of view, it is of advantage that the extent of the spasm should necessitate an operation on both sides, as thereby dissimilarity in the appearance of the right and left muscles is avoided.

(4) The neuralgia which follows sections of the nerves is especially felt in the shoulders, and appears to be of a very fleeting character.

(5) The spinal accessory nerves may both be cut down upon at the same time, as the whole operation can be done with precision in about fifteen minutes. In the case of the posterior cervical nerves the two sides should never be done at one operation, because the duration of the double operation might seriously increase the risk to the patient, or the onset of dangerous symptoms might necessitate the second operation being left unfinished.

9. Treatment of congenital torticollis.

Lorenz (*Wien. med. Presse*, Feb. 19, 1893), after the division of the sterno-mastoid just above the clavicle by the open incision, together with the sheath of fascia and any contracted bands that can be felt, advocates, during the narcosis, that the scoliosis should be combated by continuous force to the contracted ligaments, the ear of the opposite side being brought down so as to touch the shoulder. The head is then secured by bandages in the extreme overcorrected position for ten days, and suitable exercises are subsequently employed.

10. Osteoclasia.

Nicholas Grattan, of Cork (*Provincial Medical Journal*, July 1, 1893), has now operated 153 times with his screw osteoclast. His older instrument has been much improved in many ways. He has replaced the racket attached to the former patterns of the instrument by a small thumb-screw, and by this means has been able to regulate the distance of the opposing bars with great nicety. He has also been able to prevent the central pressure-bar from rotating by means of a strong guide-rod attached to it, and working parallel to the screw through the pivot which connects the bars together. The screw is much more powerful. It is one inch in diameter, and contains five threads to the inch. The levers moving it are eighteen inches long. Grattan believes, from experiments performed on an adult post mortem and from the appearance in a case operated upon some months before death,

that the fracture is transverse, and can be made at the point of selection without injury to the periosteum. Three months after the osteoclasia the bones were found in perfect position, and there was no injury discoverable in the periosteum or muscles, nor any signs of inflammation. With his new instrument Grattan guarantees to break a bone with ease and quickness at any given point irrespective of the age of the patient. [The reporter has recently succeeded in breaking with Grattan's newest instrument the femora in a case of knock-knee, which some months ago could not be broken with Thomas's largest osteoclast. The powerful steel lever-arm of Thomas's instrument bent, but the bones would not snap. With Grattan's screw both femora cracked transversely in the desired situation with the greatest ease.]

SURGICAL DISEASES OF CHILDREN.

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I. Tubercular adenitis.

Tubercular adenitis was dealt with in this section of the last "Year-Book." It is one of those subjects in which great therapeutic advance has been made of late.

In the surgery of childhood three operative procedures have in the last few years been prominently thrust, as it were, upon the operating surgeon, readily adopted by him, and eagerly practised, and in each instance greatly to the benefit of the patients. First comes the radical treatment of unmanageable herniæ; second, the treatment of naso-pharyngeal growths; and, thirdly, the effectual dealing with tubercular glands, especially those of the neck.

It is unlikely that in any one of these departments reaction will set in, and that the surgeon will eventually arrive at the conclusion that his operative measures were, after all, not absolutely warranted.

It is well to look around now and then and see how our colleagues in distant countries are proceeding in particular directions. In connection with the subject of Tubercular Adenitis, the practice of **Professor William White**, the illustrious teacher of clinical surgery in the University of Pennsylvania, is thus reported in the *American Journal of the Medical Sciences* (Jan. and Feb., 1893):—"During the period embraced in this report, 76 operations have been performed for this affection. The tumours were found in the following regions: cervical region, 55; axilla, 7; inguinal region, 5; miscellaneous, 9. The majority of the patients were children or young adults. All recovered. The histories are so similar that a brief outline will suffice for the group. Usually there had been lesions of the area drained by the lymphatics communicating with the inflamed gland, thus opening the way to tubercular infection or rendering active a latent tuberculosis. When the cervical glands were involved, inflammations or catarrh of the tonsils, fauces, or pharynx, carious teeth,

middle-ear disease, or eczema of the scalp, have been the lesions preceding the tubercular infection. About two-thirds of the patients gave a tubercular family history. Experience in this service has convinced us that, although a gland thus infected may remain quiescent for a long time, may undergo caseation or softening, or, if subsequently infected with pyogenic micro-organisms, may suppurate, it rarely undergoes spontaneous resolution. Most of the patients had been treated locally and constitutionally for long periods before applying for relief by surgical measures, apparently without benefit in any individual case. The propriety of removing such diseased glands is undoubted. Objections have been made on the grounds that an operation may kindle a latent tubercular affection, or cause a local disease to be rapidly disseminated. With regard to the former, it must be remembered that latent tuberculosis of these glands frequently becomes active without discernible cause; the latter objection is largely theoretical. Both lack the support of experience. Neither of these untoward results has occurred in this service. Moreover, operation ensures a much less conspicuous scar than when the diseased glands are allowed to open spontaneously."

"The method of operation depends upon the stage the disease has reached. If softening has not occurred, excision is preferred, and all enlarged glands are removed, the wound being closed as in any other non-infected wound. If softening or suppuration has taken place, erosion is selected; or if all diseased tissue cannot be removed in this way, combined excision and erosion are employed, all infiltrated or ulcerated skin being sacrificed. In those cases in which a clean excision has been impossible and primary union cannot be expected, the cavity is swabbed out with a solution of zinc chloride, 30 to 60 grains to the fluid ounce of water, and the wound is packed with iodoform gauze. Even with the greatest care, minute infected glands may be left behind and recurrence sometimes follows. These are removed as soon as they are detected."

Professor White then briefly cites the features of chief interest in some of his operations, which, as might be expected, are just such as we in England are in the habit of encountering: "Some of the operations upon the neck have been extremely delicate and tedious, requiring prolonged and careful dissections. The sheath of the great vessels was usually exposed, and not infrequently the growth was intimately adherent to it. In two cases lateral ligatures were applied to the internal jugular vein to check bleeding occasioned by the tearing away of small veins at their point of entrance to the main trunk."

Of all the contingencies which may arise, nothing is so much to be dreaded as laceration of the internal jugular vein, or of a considerable branch at its point of entrance into it. In children this vein appears large out of all proportion, and if, when the surgeon is removing a tuberculous mass from its neighbourhood, the vein is wounded, the rush of blood may be truly alarming. It has occurred in my own practice on several occasions, and twice when I was operating in private houses, and was "short-handed." Given the case of a small child, with a large rent in a swollen internal jugular vein, an untried anæsthetist, and a strange or an unhandy assistant, and I know of no surgical position more embarrassing or more critical. In thus calling attention to a complication which may, indeed, arise in any of these operations, I would like to offer a word of caution to practitioners who, not being in the habit of operating, lightly undertake the clearing away of a mass of glands from a child's neck. For although there is nothing of the nature of "specialism" in the operation, and although it may prove a perfectly simple affair, and produce the most satisfactory result, it may, on the other hand, involve the surgeon in an exceedingly unwelcome and alarming predicament, from which he has no means of escape.

In one of my own cases, with a mass of tubercular glands which stretched from occiput to collar-bone, the internal jugular vein was wounded so near to the base of the skull that it was found to be impossible to apply a ligature. We had, therefore, to seize the vein with a pair of pressure forceps at the posterior lacerated foramen; these we left on for forty-eight hours. The result proved entirely satisfactory.

Adrian Haehl, at the Strasburg Surgical Clinic (*Deut. Zeitsch. für Chir.*, Dec., 1892), gives a critical and statistical review of the *Results of the extirpation of tubercular cervical glands*.

He quotes **Von Bergmann** as being an opponent to this "difficult operation" in children for three reasons: (1) because of the loss of blood entailed; (2) because of the difficulty of keeping on the dressings; and (3) because of the uncertainty of the entire removal of the disease. On the other hand, he mentions **Schüller** as being a keen advocate for the operation of excision. **Lücke**, whose work Haehl specially reports, occupies a position midway between that of Von Bergmann and that of Schüller, which is much in accordance with the English view.

At the Société de Chirurgie (*Gazette des Hôpitaux*, July 15, 1893), **Moty** read a paper upon the treatment of tuberculous cervical glands by camphorated naphthol, of which we in England

know but little. **Marchand**, who followed, spoke well of the injection treatment, but said that excision had always given him good results. **Monod** agreed with **Marchand**, but concluded by saying: "When the glands form an adhering and suppurating mass, excision often becomes very difficult." No surgeon who has seen much of these cases will be likely to dispute this fact, though he might not be able to support **Marchand** and **Monod** in their views on the injection treatment. Indeed, several instances of poisoning by this injection were reported, **Kirmisson** alluding to two cases in which children were subsequently attacked by epileptic seizures, one of which ended fatally. **Verneuil** insisted on the importance of examining the urine before injecting the camphorated naphthol.

Pridgin Teale, at the Newcastle meeting of the British Medical Association, remarked that in the treatment of enlarged cervical glands there are two aspects of the question which must be kept steadily in view: the pathological and the æsthetic. Our guiding principle must be, in the words of Professor Allbutt, "that, whenever septic material is contained in the system, we rest not until it is expelled, and its burrows are laid open and disinfected." In doing this the surgeon must make it an artistic study how to effect this purpose with the smallest possible amount of blemish.

The ugly scars and unseemly depressions, once so familiar in scrofulous necks, should be deemed an opprobrium of surgery; whilst to delay operation until the skin is thin, red, and ready to break down, or has already given way, should be looked upon as mischievous trifling. May we not hope, moreover, that the time is not far distant when the absolute inutility of painting the skin in the hope of influencing a caseating gland deeply seated beneath muscle and deep fascia will be fully realised by the professional mind?

Let us first deal with the "æsthetic" question, which may be stated in the following propositions:

(1) Whenever fluid—*i.e.*, pus—can be detected in connection with a diseased lymphatic gland, the operation should be done *before* the skin becomes red and thin—*i.e.*, before the skin has been spoiled by advancing suppuration.

(2) When the diseased gland is subcutaneous—*i.e.*, not beneath the deep fascia or muscle—and has been completely removed, the least scar will result if neither stitches nor drainage-tube be used, especially if it be possible to leave the wound uncovered by dressing and exposed to the air, so that the edges may be drawn and glued together by drying lymph.

(3) If the diseased gland be beneath the muscle or muscular

fascia, then a drainage-tube must be used, and the edges of the wound must be united by suture. For this purpose probably horsehair or silkworm-gut soaked in carbolic lotion is the best suture.

(4) Where many glands have to be removed, it is better, as far as may be, to remove them through a series of small incisions, and to avoid very extensive ones.

On the "pathological" aspect, Teale continues, the following points are worthy of attention :—

(1) That all sinuses and suppurating cavities should be thoroughly cleansed by means of a scraper and lint, so as to leave a fresh surface free from granulation or decayed or decaying tissue, and that a drainage exit should be maintained until all the deep parts are healed.

(2) It is essential to know, and to bear in mind, that the visible abscess, which has often been called and treated as a suppurating gland, is frequently but a subcutaneous reservoir of pus, the source of which (a degenerated gland) is not *subcutaneous*, but subfascial—*i.e.*, under the deep cervical fascia—and often submuscular, under the sterno-mastoid, the communication between the two being a small opening in the deep fascia just large enough to admit a probe or director. This opening may be easily overlooked, and is not always easily found even when searched for ; but it *must* be found or the operation will be a failure.

(3) It is bad surgery simply to incise an abscess in the neck without searching for, and thoroughly eradicating, the gland that is the starting-point of the abscess. Therefore no such abscess should be opened without putting the patient under ether and being prepared with all necessary means for eradicating the diseased gland.

(4) It sometimes happens that after the extirpation or enucleation of a gland, the finger detects in the wall of the capsular cavity the slight convex bulging of a contiguous gland. This should be pricked through the wall of the cavity and so reached and extirpated or enucleated. In this way in several instances I have emptied from one external opening a group of three or four glands massed together and suppurating, or otherwise broken down.

(5) What has been said hitherto concerns glands which are suppurating or obviously breaking down. As to caseous glands, the conclusions I have arrived at are as follow : When we have dealt with a broken-down gland which has proved to be undergoing caseous degeneration, we may infer that any other enlarged glands then present, or subsequently appearing, are becoming

caseous also. Therefore it is my belief that it is better for the patient if, in the absence of reason to the contrary, such glands are removed as soon as the surgeon is convinced that the enlargement is persistent and not merely transitory, without waiting for evidence of fluctuation or pus.

(6) In a very large number, indeed in a majority, of the instances of scrofulous neck which have come under my care, there was no evidence of any constitutional taint or weakness. The origin of the ailment was often clear and defined—bad drains in many instances, scarlet fever, mumps, etc. The cases were frequently isolated instances in families free from any tendency to constitutional disease, and health and perfect vigour were restored after the destruction of all degenerate or septic material.

2. Adenoid growths in the naso-pharynx.

In a leading article on this subject the Editor of the *Medical Mirror* (St. Louis), 1893, p. 36, remarks that although Meyer was the first to describe the condition, he left practically nothing more to be said. "In one respect only had criticism to be made on his work. He failed to detect the true pathological character of the growth as adenoid tissue. One great error is made in the management of these cases. This is the supposition that it is simply a local disorder of the throat; it is, in fact, a general disease, with marked local manifestations; it shows a certain constitutional tendency, hard to describe definitely; it is but one step removed from tuberculosis. It is marked by a tendency to hypertrophies in glandular and adenoid tissues. The constitutional tendency should receive our attention. One preparation is especially indicated—the syrup of the iodide of iron. The dose usually prescribed is too small. A child from three to five years may take safely, and with the greatest advantage, from one-half to one teaspoonful three times a day. This treatment should be continued for several months.

"The question arises, Can we avoid operation in young children for this affection? It is entirely possible if the growths are not of long standing, and are soft. They sometimes entirely disappear under the iodide of iron treatment; but this cannot always be accomplished."

It is certainly well that the surgeon do not regard this variety of naso-pharyngeal infiltration as a mere mechanical obstruction which has always and only to be scraped away. Though no doubt operation has usually to be resorted to for the relief of the obstruction, still one must not for a moment lose sight of the fact that the disease is a symptom of tuberculosis.

Thomas R. French, before the Medical Society of the County

of Kings, U.S.A., April 18, 1893, said: "The method of operating best adapted to the removal of these growths in children is as follows: After being wrapped in a blanket and etherised, the child is placed in a chair, tilted well backwards, and tied to it with long and broad linen bands. The chair is then raised slowly to the upright position, to avoid the disturbance in the circulation which sometimes results from too rapid a change in posture." Bogart, however, remarked in the discussion, that it appeared to him that there is considerable advantage in placing the patient upon his back and allowing the head to hang over the end of the table—if necessary, putting a pillow under the shoulders. By that posture the larynx is raised to a higher plane than the nostrils, and even if there is very free bleeding, the blood will flow out of the nose before it reaches the level of the larynx. All danger of strangling is thus avoided, and one need not constantly sponge out the pharynx during the progress of the operation. Neither will the blood flow into the stomach, and the coincident evils are therefore avoided.

S. Spicer (*Clin. Journal*, Oct. 25, 1893) stated that "the patient should be laid for the operation on his back, on a mattress on a narrow table. Pull the mattress a little over the edge of the table, so that the patient's head hangs down over the edge immediately opposite the window, so that the light falls well in the throat. The blood can stream out from the nose and mouth in this way, instead of getting into the larynx and lungs. Other positions are used by other operators—on the side, or sitting in a chair all the time, even while giving the anæsthetic. Of course, I suppose each one prefers the position which he has found safe and is accustomed to. I find the supine position perfectly satisfactory and the lateral one awkward."

This is the position which I have been in the habit of adopting, and though various objections have been raised against it, I have always found it perfectly satisfactory (*Practitioner*, 1893).

3. Retro-pharyngeal abscess in infancy.

Bilton Pollard (*Lancet*, Feb. 13, 1892).—Retro-pharyngeal abscesses were formerly considered to depend invariably on spinal caries. There is no doubt, however, that this was a mistaken view. The majority of cases occur in quite young children, and in them the pus collects in the cellular tissue between the pharynx and the fascia covering the prevertebral muscles; whilst the tubercular abscesses, which depend on spinal caries, are situated beneath the fascia and ligaments, in close contact with the vertebræ. The relative frequency of the two classes of retro-pharyngeal abscess has been pointed out by

Bókai, who collected the records of 204 cases which had been observed at the Children's Hospital in Pesth during a period of twenty-six years. Only 7 cases in this large total were dependent on spinal caries, whilst as many as 189 were of a purely local nature. As soon as a retro-pharyngeal abscess is diagnosed, steps should be taken to open it, lest urgent dyspnoea come on (as happened in one of the cases recorded in this paper), or in case the abscess burst when the child is asleep, or when assistance is not at hand, and the matter be sucked into the larynx and cause suffocation. An incision about an inch in length, and about an inch below the mastoid process, was made along the posterior border of the sterno-mastoid. After the fascia covering the muscles in the floor of the posterior triangle was exposed, a cautious dissection with blunt instruments was made behind the deep vessels and nerves of the neck until one finger placed in the wound almost met another placed in the pharynx. A director, guided by the finger in the pharynx, was then thrust into the abscess, and the opening enlarged by passing a pair of dressing forceps into it and forcibly separating the blades. A drainage-tube should be inserted, and care should be taken that it does not slip out of the abscess cavity, as happened in one of my cases, and give rise to reaccumulation of pus.

4. The surgery of the air-passages and thorax in children.

For Prof. Pitts' Lectures, *see* Diseases of the Throat and Nose, p. 429.

In the course of a post-graduate lecture delivered at the Hospital for Sick Children, **John Morgan** showed a child who came under his care for hoarseness, the result of laryngeal papillomata. "Her condition becoming desperate, I performed the usual operation of tracheotomy, and removed a number of growths from the mucous membrane below the cords. The symptoms soon after recurred, and I divided the thyroid cartilage and scraped away a fresh crop of similar growths. They continued, however, to recur, arising at each time from a part of the mucous membrane below the site that had previously been cleared. Various means were tried to check their recurrence. Caustics such as chromic acid were used, and on two occasions I seared the mucous membrane with the galvanic cautery. In all, the operation was repeated eight times, and the last batch of growths was removed from the bifurcation of the trachea and the commencement of the two bronchi. The child has now been in excellent health for some time, though she has, as might be expected, some stenosis of the trachea at the site of these many operations."

In concluding his lecture, Morgan refers to the merits of intubation:—"Again, it is sometimes a useful plan to follow after tracheotomy has been performed, and where there is difficulty in dispensing with the tracheotomy tube. But with these exceptions the plan has not given such satisfactory results as were promised."

Under the heading of *Tracheotomy*, **Pitts** rightly condemns the customary treatment of steaming the child in a tent-bed:—"It is quite pitiable to see children fighting for their lives under such enervating conditions. The air of the room should be kept pure and at an even temperature of 65°. Above all, the bed should not be placed near a hot fire, with the spray from a kettle constantly playing over the face and body. A sponge kept warm and moist should be always over the tube, and the inner tube changed every hour, or even oftener, whilst the discharges are thick. A great deal of harm may be done by a too zealous nurse, especially by the constant introduction of a feather to clear the tube, and by attempts to thus extract membrane from the trachea." As regards the use of the throat-spray, he quotes the practice of an excellent house-surgeon of the Children's Hospital, **Horace Collier**, a mercuric solution of 1 in 1,000 being generally employed:—"In using the hand-spray, it was found necessary to use a tongue depressor, because, however willing the patient was, the solution did not thoroughly reach the posterior pharyngeal wall unless the tongue was depressed. Each spraying procedure lasted from two to four minutes, including a pause for a few seconds at the end of each half minute, and the quantity of solution used was about 5j. While membrane continued to be evident, the application was made every three hours; it was then continued for a day or two, at intervals of six hours."

After fairly discussing the relative merits of tracheotomy and intubation in diphtheritic dyspnœa, **Pitts** says, apparently with sorrow, "Without special study, tracheotomy is undoubtedly the safer operation."

Max. Thorner, of Cincinnati, refers to the case of a boy with laryngeal stenosis (not diphtheritic) whom he treated by O'Dwyer's method. "The tube is somewhat larger than the largest tube of the set used for children. Before it was introduced it was well oiled, and the larynx anæsthetised with a 5 per cent. solution of cocaine. The patient could readily breathe through the tube, and he complained of no pain. It was my intention to permit the tube to remain in the larynx for twenty-four hours; but on the following morning, about fifteen hours after the introduction, the patient returned and begged me to

remove the tube. He stated he was greatly annoyed by it, and could not take any food whatever. I extracted the tube without any difficulty, with the understanding that it was to be reintroduced in the evening. The patient was relieved, was able to take some water, and left my office after a few minutes, feeling comparatively comfortable. About fifteen minutes after he had left me I was called to the street, about a half square away, where the patient was lying dead on the sidewalk." "The unfortunate accident can be easily explained:—After the pressure exercised for fifteen hours by the tightly-fitting tube upon the infiltrated tissues had been suddenly relieved, a subglottic œdema ensued, causing a fatal issue within a short time."

Max Scheier (*Archiv. de Laryng.*, Nov., Dec., 1893) gives the experience of intubation in the Urban Municipal Hospital in Berlin (*Epit. Brit. Med. Journal*, Jan. 14, 1893). His conclusion is that intubation will prove to be a valuable auxiliary in the treatment of laryngeal stenosis due to diphtheria, but that its most important field will be in the treatment of chronic stenosis of the larynx.

5. Excision of the knee-joint for tubercular disease.

A. G. Miller (Med.-Chir. Soc., Edin., Nov., 1892), after insisting on the need of clearing away every vestige of diseased synovial tissue, directed attention to a modification in the operation which he has introduced. I have tried his method, and approve of it so highly that I shall henceforward have frequent recourse to it. It is as follows:—

After reflecting a semilunar flap of skin upwards, well above the patella, he cuts through the tendon of the extensor of the thigh a little above the patella, and also through the fibres of the vasti, internal and external. The synovial membrane is thus exposed, and it is then quite easy to push up the muscular substance and to draw down the thickened synovial membrane, which comes readily off the periosteum, and has then to be cut at its attachment round the articular surface of the femur. In this way four-fifths or thereabouts of the synovial membrane is removed in one mass, with the patella embedded in it. Those portions of the membrane that cover the ligaments are then removed by the sharp spoon. The ligaments are scraped till they appear clean and white, and are then cut through to permit of complete flexion of the joint, and the operation is completed by the removal of a sufficient amount of bone.

Further, in order to remove the loose ruck of skin which usually bulges across the front of the joint after the limb has been

straightened, he thus proceeds :—" After making an incision from behind the one condyle to behind the other, across the front of the knee and at the level of the top of the tibia, I make another cut, commencing and terminating at the same points, but over the centre of the patella. These two incisions include an elliptical portion of skin, which is left attached, and the skin is dissected up over the synovial membrane from the upper cut as described above." After the operation thus performed there is no difficulty in approximating the cut margins ; on the contrary, the edges come easily and neatly together.

Speaking of the results of arthrectomy and excision, Miller makes a remark which most operating surgeons—but not all—will cordially endorse. " Movable knee-joints are only to be got in circumstances under which recovery might be obtained by immobilising the limb."

A clinical lecture upon *Excision and Arthrectomy*.—Barker (*Clin. Journal*, Feb. 3, 1893) says, " Relieved of the nightmare of septic infection, we now open joints for exploration and for treatment without misgiving, and consequently are encouraged to interfere by operation at an earlier stage of the disease than was formerly thought justifiable. And all this without for one moment losing sight of the fact that the great majority of tubercular knees could, if seen early enough, be cured by rest and other appropriate treatment."

" At the present day there is little question of risk to life and limb in this class of operation in the hands of those who aim *seriously* at perfect asepsis : we are left, therefore, free to consider the function of the limb and the general well-being of the patient almost exclusively."

Barker is generally considered a warm advocate for excision, and it would probably be difficult to find a surgeon who is more successful in aiming at perfect asepsis than he. One is almost surprised at finding in his lecture that he ever had cause to reproach himself for having withheld excision. " I have more than once felt humiliated by some of the cases when, after (as in one instance eight) years of treatment which only resulted in a stiff, swollen, and painful knee quite impossible to use, I have found, on performing arthrectomy at the patient's request, that these years had been thrown away, and that there were large tubercular sequestra and caseating foci in the joint which no amount of patient treatment could have cured without operation. And when I have seen such a patient walking about, in eight weeks after operation, on a perfectly firm and painless limb, with a sound scar, I have asked myself, Why waste so much time in

future cases like this? If the joint is to be stiff in either case, why not remove the disease and let it stiffen *soundly* in a couple of *months*, instead of subjecting the patient to as many or perhaps double the number of *years* of irksome treatment for no better result, even if no operation is necessary in the end?"

What surgeon is there who has not had, from time to time, occasion to regret months spent in endeavouring to vindicate the principles of conservative surgery in the treatment of tuberculous knees? But, on the other hand, in domestic practice one rarely excises a knee; and, as I look through my private notes, I find cases that I have watched for years steadily recovering under conservative measures—genuine tubercular knees which have, after much patience, completely recovered with perfect movement. The bacilli (if they are the actual cause of the disease) are, I suppose, the same in private patients as in hospital. Their environment, of course, is different. It is a relief, however, to find from time to time that a tubercular knee is not necessarily a doomed knee: that the bacilli (if they are the actual cause of the disease) are not as yet entirely beyond our control. Some of these children to whom I am referring would, I feel sure, have had their knees excised if they had by chance found their way into some hospital wards—and not improbably if they had been admitted into my own. As it is, I say, they are now walking about with sound and movable joints. At the very best, an excised knee gives but a poor result, for the limb must inevitably remain both short and stiff. When the child is exhibited a few months after the operation, everything looks extremely satisfactory—the swelling and pain have gone from the joint, and, with a slightly raised boot, there seems nothing left to be desired. But if the patient is seen five or ten years afterwards, the case is, as a rule, far less suitable for exhibition. Probably there has been so serious an arrest of development that the limb is four or six inches shorter than the other, or even more. Possibly the junction between femur and tibia had begun to yield soon after the operator had lost sight of the child, and now the leg is, though synostosed, considerably flexed on the thigh; or tubercular disease may have started afresh, and serum is still leaking from unhealthy sinuses; or, lastly, the union may have broken down long since, and when the patient is seen after a considerable interval, it is found that he has been under hospital treatment elsewhere, and that the surgeon found it necessary to amputate the limb.

I confess that I am not in love with the operation of excision of the knee-joint, though I still perform fully my share of these

operations, and shall probably continue to do so. Having but a poor opinion of it, it is quite possible that I resort to it with less readiness than is its due, and in consequence derive less favourable results from it. What we all want to arrive at is a knowledge of the exact time at which we should advise excision. But as the conditions of no two knee-joints are exactly alike, and no two patients have exactly similar constitutions; and as, moreover, the experiences and the leanings of no two operating surgeons are without differences, it will be impossible that any definite rule can ever be formulated on this point. The surgery of resections for tuberculous knees can never be regulated by such simple and unvarying canons as those which guide us, for instance, in the treatment of anal fistulæ and traumatic aneurysms.

At the beginning of this year a young Graduate in Arts came to consult me about a tuberculous knee which had interfered for many years with his health and happiness. After careful examination and mature deliberation, I told him that the right treatment was resection, and I advised its immediate performance. He replied that he was prepared for that verdict, but that he did not intend to accept it. He said that he had a friend whose knee had been excised, and that though it was now sound and solid, it was constantly in his way; that whether in church, theatre, or omnibus, it was a constant annoyance to him. He continued that, influenced by what he had seen and heard, he had decided that amputation was the better treatment, and with this his friend with the resected joint apparently agreed. Therefore, without delay, amputation was performed; and when I saw the gentleman again in October last, and asked him if he had ever regretted that he had not had the resection done, he replied, "Never for one moment!"

Though I am not posing here as an advocate for amputation as against excision, still I have thought it not amiss to present the question of resection from another point of view. Though in many cases of knee-disease excision is still the proper operation, we must not lose sight of the fact that it gives after all, and at the very best, an exceedingly imperfect result.

The treatment of tubercular joints by the injection of a solution of chloride of zinc (after the method of Lannelongue) is alluded to by **Reverdin** in the *Revue Médicale de la Suisse Romande* (Aug., 1893). My own little experience of the method has not been satisfactory; yet I am of opinion that in suitable cases this sclerogenetic treatment is not without advantage. Reverdin likewise, though he has just had occasion to excise two knee-joints which had been unsuccessfully treated by other surgeons with the

zinc injections, says: "My impression is that if the surgeon thus succeeds in diminishing the number of cases needing resection, there will always be a future for this method." How welcome at the present time would be a drug which has the power of diminishing the number of hip and knee excisions!

At the *Congrès pour l'Étude de la Tuberculose* (*Gazette des Hôpitaux*, Aug. 22, 1893), the sclerogenetic treatment was again *en évidence*, some children being shown who had been subjected to it—children who had been before the *Congrès* in 1891. "One of these patients was specially noteworthy. He had (in 1891) non-suppurative tubercular arthritis of the knee—a plaster cast taken at that time showing the great extent of the disease. Under Lannelongue's treatment he had quickly recovered, and for a long while had been walking about with an easy and normal gait." Verneuil remarked that the combination of arthrectomy with the zinc treatment gave better results than any form of resection.

6. Acute osteo-myelitis of each humeral diaphysis.

At a meeting of the Medical Society of London, Feb. 27, 1893, Edmund Owen showed an infant which had suffered from double acute septic osteo-myelitis of the humerus at their upper ends. He stated that on June 10th, 1892, a male child two years and a month old was brought into the Hospital for Sick Children in a state of extreme exhaustion. The mother said that a little more than a fortnight previously he had had a series of fits; that since then he had been feverish and unable to eat, and that on the day before his admission she had noticed that the shoulders were swollen, hot, and painful. On admission the child was found to be somewhat rachitic, very anæmic, and ill. The temperature was 104·4°. The skin over each shoulder was tense, red, shining, and hot, and marked with distended veins. Fluctuation could be obtained across the joints. The case was diagnosed as one of acute septic inflammation of the upper end of each humeral diaphysis, with implication of the shoulder-joints. The child was therefore at once taken into the theatre, and when he was anæsthetised, Owen opened one abscess by cutting through the deltoid, while the surgical registrar, Wagstaff, did the same for the other. On both sides the joints contained pus, the cartilage of the humerus being extensively destroyed. The head of each humerus was resected, and the end of the diaphysis was scraped out. The joints were then washed out with a solution of chloride of zinc, drainage-tubes being inserted. The wounds were dressed with wood-wool, and the arms were fixed to the side. The child made an uninterrupted recovery, the joints being left freely movable.

Paul Berger (*Mém. de la Soc. de Chirurg.*, July, 1893) reports a somewhat similar though less acute case. It was that of a girl whose trouble began with a painful swelling in the upper part of the left arm. Purulent infiltration supervened, together with necrosis and fracture of the humerus. Amputation at the shoulder-joint had at last to be resorted to, after which the girl made a complete recovery.

Acute septic osteo-myelitis is one of the most serious conditions that can be met with in children. The inflammation is usually preceded by an injury which has lowered the vitality of the bone, or by some fever that has left the child in an enfeebled condition, so that the micrococci (which are probably lurking in or about every child) are enabled to obtain a foothold in, and spread devastation through, the tissue. The delicate new bone at the end of a diaphysis is the favourite seat of the disease, and in very little children the neighbouring joint may be quickly involved. So often, indeed, does this happen that these cases were once grouped together to form, as it were, a special disease, under the name of "acute arthritis of infants." Subsequent experience has shown, however, that there is no need for such a classification. The lesion is not primarily a joint disease, nor is it an epiphysitis. It is at first a *diaphysitis* close to the junction-cartilage. Perhaps the best name for it is para-epiphysitis. Not a few of the subjects of the disease die outright from shock, whilst others succumb to acute blood-poisoning. If recovery does take place, it is usually at the expense of the joint, if not of the limb. The simultaneous affection of the two shoulders, as recorded above, points, I think, to the constitutional origin of the trouble (as opposed to that of local injury); whilst the recovery of an apparently moribund infant after resection of the upper extremity of each humerus shows once more the importance of prompt and vigorous treatment in every case, however apparently hopeless.

DISEASES OF THE GENITO-URINARY SYSTEM.

BY REGINALD HARRISON, F.R.C.S.,

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1. The surgery of the kidney.

Commenting on the treatment of movable kidney, Henry Morris (Cavendish Lecture, *Lancet*, June 17, 1893) observes: "As to the severity of the symptoms excited by movable kidney, and the relief afforded by nephrorrhaphy, no one who has witnessed the severest forms of renal colic, the great general disturbance of health, and the nervous anxiety caused by the feeling of dragging or of something dropping from the loin to the groin, can any longer doubt either the reality of the suffering or the benefit derived from the operation. The curative effects of the proceeding are most gratifying if the sutures are made to pass into the kidney substance and the loose fibro-cellular capsule is shortened and stitched also to the muscles and fascia of the loin. Tuffier stated at the Surgical Congress in Paris, when speaking on the distant results of renal surgery, that in every case of nephrorrhaphy the result was perfect when the operation was clearly indicated."

Referring to anuria in connection with operations on the kidney, Morris remarks: "In a small proportion of cases, after nephrotomy or nephrectomy, suppression of urine follows—indeed is caused by the operation—even though no mechanical obstruction whatever is present on the opposite side. These are typical instances of reflex anuria due to the disturbance of the nerve plexus of the organ operated upon. I have not as yet attempted operative treatment for such a case, nor do I know of its having been used; but it has been proposed by Meyer, under certain specified conditions, to treat cases of anuria coming on after nephrectomy by 'an artificial direct depletion' of the remaining kidney, with the view of reducing the hyperæmia which follows the ligation of the renal bloodvessels of the kidney removed. I do not think we must be sanguine of the result of such depletion, though the proposal seems to be worthy of trial."

Further, the author remarks: "Some of the latest developments in operating upon the higher urinary organs relate to stenosis, valvular stricture, and valve formations in the ureter. Plastic operations after resection of portion of the ureter, longitudinal division of stricture and transverse union of the longitudinal wounds, and excision of the ureter in its whole length after nephrectomy for tuberculous disease, have each been performed with success by Küster, Christian Fenger, and Reynier (*Mercredi Médical*, Feb. 22, 1893). It is highly probable that one or other of the plastic operations may advantageously replace nephrectomy or nephrotomy in certain cases of moderate degrees of non-calculous hydronephrosis, more especially when there is any doubt about the healthy condition of the opposite kidney."

It is probable from some experiments recently made by Van Hook (*Brit. Med. Journal*, Epitome, April 8, 1893) that a ruptured ureter may be united by suture combined with the invagination of the divided ends. Though only tested in dogs, this treatment is considered more readily applicable to man, as the ureter is larger and more accessible.

We recognise in several of these developments of kidney surgery the importance of the digital exploration of the suspected organ from the loin, a proceeding which has much in common with what used to be done, before the introduction of the electric cystoscope, in some obscure conditions of the bladder. In fact it may now be said that the making of a wound in the loin sufficient to permit of the introduction of the finger so as actually to feel the kidney is a necessary part of diagnosis and treatment in some painful and chronic disorders of the organ which are found unamenable to other methods of cure. There can be no doubt that in many cases the kidney has gradually been destroyed by a stone which not only could easily have been detected and removed before any structural damage was done, but for which no other method of treatment was applicable. The progress that has been, and is being, made in the surgery of this part is very remarkable, and is well illustrated in the examples I have selected. It seems probable, from observations which have been gradually arrived at, that certain deformities of the bladder may be best approached in the first instance by direct interference with the urinary excretion through the kidney. In a recent work ("The Surgical Disorders of the Urinary Organs." Fourth edition. 1893. Churchill) I have thus referred to this point: "On reviewing what has been done for this class of deformities (extroversion of the bladder) I am disposed to think that its relief will eventually work out most advantageously in the

following way : By (1) the establishment of a lumbar fistula with a kidney, preferably the right one ; and (2) the removal of the opposite kidney as soon as the urinary fistula has been rendered permanent. In this way the whole of the urine would be voided through one fistula, means being taken to collect the excretion as it escapes." Gross (*Amer. Journal Med. Sciences*, July, 1885) refers to a case mentioned by Henry Morris, "where about ten ounces of urine were passed daily into a receiver adapted to the loin, the patient suffering neither inconvenience nor discomfort." After the formation of one permanent lumbar fistula, the surface being no longer saturated with urine, it would, I believe, be comparatively easy not only to close in the protruding mucous membrane, but further, under these altered conditions, to make a penis out of the fissured one which might permit of the performance of the sexual act. To collect the urine as it drops from the lumbar fistula, an apparatus, such as Meyer suggests (*Annals of Surgery*, April, 1892), in the shape of "a bustle," as worn by ladies, could be employed. Further, such a means of diverting the flow of urine might be found useful in some cases where extirpation of the bladder was otherwise feasible, as, for instance, in malignant disease. The bladder, being merely a receptacle for urine, cannot be regarded as a vital organ, provided that its function as a reservoir for urine can be dispensed with.

2. Resection of the bladder.

Albarran (*Brit. Med. Journal*, Epitome, Feb. 4, 1893) exhibited at a meeting of the French Academy of Medicine (*Sem. Méd.*, Jan. 18) "a man upon whom he had performed symphysiotomy and then resection of part of the wall of the bladder. The patient had been previously operated upon for a pedunculated neoplasm of the bladder by the supra-pubic method in April, 1890. A year afterwards hæmaturia reappeared, and on cystoscopic examination a sessile epithelioma growing from the inferior part of the bladder near the neck, and extending upwards along the left lateral wall, was diagnosed. In September, 1892, the patient was submitted to the following operation : An incision, shaped like an inverted Y, was made in the hypogastric region, and the structures of the abdominal wall divided. The tissues overlying the pubes were separated with a bistoury and then raised. The bone was then divided with a chisel and hammer. The thighs were abducted, and by this means a separation of 42 mm. of the pubic bones was effected. The inferior and left lateral parts of the bladder, which were affected with the growth, were removed by incision, and the margins of the wound in the bladder wall brought together and closed with numerous sutures

arranged as a double row. The subsequent progress of the case was good. The wound closed entirely, leaving a small scar, and the man resumed his ordinary occupation."

Such a proceeding as is here described is only applicable to tumours and ulcerations involving a very limited portion of the bladder wall; but by disposing of the urine in such a way as has been suggested in the preceding section, and illustrated by a case bearing upon the point, there is no reason why the entire viscus should not be extirpated with but little risk.

3. Castration relative to prostatic hypertrophy.

In a paper (*Brit. Med. Journal*, Sept. 8, 1893) on "The Present Position of the Surgery of the Hypertrophied Prostate" Professor J. William White, of Philadelphia, refers to this aspect of the question in connection with some experiments made on dogs where castration was "followed invariably, and with a promptness which was surprising, by atrophy, first of the glandular and then of the muscular element of the prostate." After referring to the papers of Griffiths upon the prostate (*Journal Anat. and Phys.*, vols. xxiii. and xxiv.), he thus remarks:—"As to the possibility of employing castration as a therapeutic method in prostatic hypertrophy, I imagine that the final answer must be left to our patients. Of one thing I am convinced, however, that if we even reach a point in certainty of knowledge in this direction comparable to that already attained in regard to oöphorectomy in relation to uterine fibroids, and can promise equivalent results, there will be no lack of cases willing to submit to an operation almost painless, with a low mortality, and followed by no such unpleasant conditions as accompany persistent fistulous tracts, either supra-pubic or perinæal, even although the operation carries with it the certainty of sacrificing whatever sexual power has survived the excessive and often intolerable sufferings of such patients." As a contribution to some observations relative to this point I mentioned briefly the particulars of a case where, with the same object in view, and under considerable pressure, I had divided the vasa deferentia of a man with an enlarged prostate (*Brit. Med. Journal*, Sept. 23, 1893). This proceeding and its effects were summed up in the following words:—"This was readily done, first on one side, and then on the other, with a tenotome, at a few days' interval, and my patient left me in the course of a short time, alleging that he had already derived benefit from it. Six or seven years afterwards, when I was in America, I ascertained that he was alive and well, but as I had no opportunity of testing the case, I thought nothing further of it until reading White's interesting lecture."

I have no doubt that the discussion which followed White's remarks in connection particularly with any structural relation that may exist between these two portions of the male sexual apparatus—a discussion in which Mansell Moullin, Joseph Griffiths, MacMunn and others took part (*Brit. Med. Journal*, Sept., 1893)—will lead to more careful observations being made in the changes, for instance, that follow single or double castration, and that hence some further light will be thrown on the pathology and treatment of the hypertrophied prostate.

4. The indications for supra-pubic cystotomy.

In reviewing his experience of this operation, F. A. Southam (*Lancet*, March 18, 1893) observes:—(a) For stone, “that the days of lateral lithotomy are numbered, and that it will soon become an operation of the past; for if a stone cannot be crushed it will be most safely removed through a supra-pubic opening, the one essential for success being a condition of the bladder which will allow of its moderate distension with fluid. In children under ten years of age I have twice crushed uric acid calculi one inch and a quarter in diameter; but if the stone exceeds this size, supra-pubic lithotomy is indicated; and, as a rule, the larger and harder the stone and the younger the patient, the greater is the reason for selecting this operation. In adults a uric acid or oxalate of lime calculus one inch and a half in diameter or upwards is best removed by the supra-pubic operation, especially if there is any enlargement of the prostate gland. In cases where there is any suspicion or evidence of chronic renal disease, and the patient is advanced in years, and probably the subject of hypertrophy of the prostate, I believe that a rapidly performed supra-pubic lithotomy is attended by much less risk than a protracted crushing operation;” (b) in retention of urine “the operation enables one of the following courses to be adopted: (1) Free drainage for a time, which is often followed by a return of the power of voluntary micturition; (2) permanent drainage by the establishment of a supra-pubic fistula; and (3) removal or division of the obstructive portion of the prostate gland;” and (c) in cystitis “supra-pubic cystotomy is sometimes required in severe or obstinate cases, especially in the tubercular form, when accompanied by ulceration. Here the operation is not only useful as a means of effectually draining and irrigating the bladder, but it also affords access to the ulcers, which may be scraped or cauterised.” In conclusion Southam states:—“I am of opinion that the opening in the bladder should never be sutured; it adds a danger to the operation, for if the bladder begins to leak after the superficial wound has entirely or partly closed,

extravasation of urine and pelvic cellulitis are very likely to occur. If, on the other hand, the suturing is successful, the operation is deprived of one of its chief advantages—viz., the free after-drainage, which is always beneficial.”

Surgeons who have had much experience in cases of suprapubic cystotomy will, I think, agree generally with the conclusions arrived at by Southam. Though the operation is comparatively a simple one, involving little else than a straightforward dissection to the bladder without being encumbered with staffs and grooves which have to be first reached by the knife, it must not be supposed that its mortality is not inconsiderable in elderly males who have either large stones or prostates to be removed in this way. **Swinford Edwards**, in his address on “Urinary Surgery” (*Medical Press and Circular*, Oct. 12, 1892), refers to it in the former instance as having a mortality of about 50 per cent. I think there is good reason for believing that some large stones—I do not say the largest—would be more safely removed by the form of perinæal lithotripsy as now practised.

5. Median perinæal cystotomy for stone in a male infant seventeen months old.

Claudius H. Mastin records an instance (*Medical News*, U.S.A., Sept. 9, 1893) where this operation was performed for the removal of a stone which is described as about as large as a peach-stone and made up of ammoniaco-magnesian phosphates. Recovery was rapid and complete. The rarity of the case is sufficient to demand its notice here.

6. Lithotomy in the female bladder.

Fancourt Barnes (*Brit. Med. Journal*, Sept. 16, 1893) records an instance of cystitis and stone where vaginal lithotomy was performed, and a uric acid calculus weighing 20 grains was removed. The vesico-vaginal wound was left unclosed in the presence of so much pus and vesical inflammation. The bladder was washed out daily with boracic acid solution, and at the end of ten days the incision had completely healed.

Such excellent results follow lithotripsy in the female, both in the child and the adult, where no dilatation of the urethra is required, that I should not feel disposed to practise vaginal lithotomy unless, as in Barnes's case, there were cogent reasons for adopting a temporary condition of incontinent urine drainage immediately after the removal of the stone.

7. The treatment of acute torsion of the spermatic cord by reduction.

W. Gifford Nash (*Brit. Med. Journal*, April 8, 1893), in referring to the published instances of this lesion—viz., one by himself

(*Brit. Med. Journal*, June 6, 1891), and operated upon by Whipple; one by Bryant (*Trans. Royal Med. and Chir. Soc.*, Feb. 23, 1892); and two others by Davies-Colley (*Brit. Med. Journal*, April 16, 1892) and H. Page (*Lancet*, July 30, 1892)—records a fifth case in a schoolboy, aged nineteen, where, though the symptoms resembled the others, the treatment differed, as the lesion was relieved without operation. The injury here was probably caused by jumping. The appearance leading to the belief that the cord was twisted, it is stated: "I therefore decided to attempt to untwist it. I rotated the epididymis in front of the testis to the patient's left, but it caused more pain and would not stay in that position. I next rotated it to the patient's right, so that it resumed its normal position behind the body of the testis. It remained so, and the lad at once said that all pain had gone. In two minutes the swelling of the testis and epididymis had gone, and in half an hour nothing remained of the trouble except some hardness and swelling of the cord at the point of twisting. All faintness and pallor had passed off. Next morning there was no trace of anything unusual."

There is something analogous in these records with a kidney lesion which was described by Bruce Clarke (*Trans. Royal Med. and Chir. Soc.*, April 11, 1893) under the title of acute renal dislocation. The cases here noted by Nash are of an exceptional nature, and for this reason are liable to be overlooked. Hence the importance of referring to points which bear upon their diagnosis and treatment.

8. Caisson working in bladder surgery.

Under this name Hurry Fenwick describes (*Brit. Med. Journal*, Nov. 19, 1892) a method of removing growths from the interior of the bladder which has many advantages. The process consists in opening the bladder above the pubes and introducing a speculum of vulcanite or white porcelain, and then, by the syphon action of a rubber catheter, emptying it of any fluid it contains, so that the tumour could be seen dry and bloodless at the bottom. By throwing in a beam of electric light by means of Washington Isaac's "search-light" (as shown in the figure accompanying the original paper), it became possible to remove the growth with accuracy and thoroughness. Rectal bags were not used, but the patient was nearly always placed in the Trendelenburg position.

This method has proved of much value, particularly in the early forms of some bladder tumours. In pedunculated growths, such as the papilloma, not only does it permit of their being twisted off with great precision, but of the stump being touched by an escharotic or hæmostatic application should this be necessary.

9. The treatment of so-called impassable urethral stricture.

Buckston Browne (*Brit. Med. Journal*, Nov. 28, 1892), on the dictum of the late Professor Syme, "that if urine comes out from a bladder through a urethra, a surgeon should be able to pass an instrument through that urethra into the bladder," bases a plea and a practice for a more deliberate method of dealing with such obstructions before proceeding to other measures involving the opening of the perinæum. The instruments he employs for this purpose are "some blunt-ended English gum bougies, varying in size from No. 3 to 10, a foot rule marked in inches, a Civiale's urethrotome also marked in inches, a No. 11 or 12 soft gum catheter mounted on a stylet for tying in at the close of the operation, and a complete set of well-burnished steel sounds." Plenty of time being taken, and the patient put in order, the way for the passage of the urethrotome is carefully prepared until the latter can be fairly introduced into the bladder. The strictures being divided, full-sized sounds are then passed and a soft catheter tied in. These may be briefly stated as the chief features connected with Browne's method of procedure.

Though the views and practice of surgeons differ somewhat, there can, I think, be no doubt that two principles of treatment are universally recognised: (1) that if urine will pass along the urethra the surgeon should be able to find something which will guide him into the bladder: and (2) that if a passage to the bladder exists and a guide will enter it, the restoration of the calibre of the canal should be brought about without proceeding, in the first instance, to the adoption of other measures. A urethra which is structurally occluded must necessarily be complicated with a urinary fistula.

10. A new instrument for difficult strictures.

A. G. Miller (*Edin. Med. Journal*, Oct., 1893) describes an instrument he has had constructed under the name of the "Syme-Spence-Lister" metal bougie, which includes "Syme's ideal of a rigid instrument, with Spence's addition of a fine probe point, and added to that Sir Joseph Lister's principle of the wedge shaft." Miller claims that it has four good points:—

"(1) It is rigid, and therefore the surgeon can guide it if necessary, and can always ascertain where its point is by observing the relative position of the other parts of the instrument, and by the finger in the rectum also if necessary (as advocated by Syme).

"(2) It has a fine probe point, which enables it to enter a very small tight stricture (as originally intended by Spence).

“(3) It is heavy. The weight of the instrument I look upon as a matter of great importance, for it enables the surgeon to dispense with all force. My practice is to permit the instrument to *drop* into the urethra. I have already stated that when it enters the stricture it generally does so *easily*.

“(4) It has a powerful wedge on the shaft. The advantage of this is evident. If this instrument enters the stricture and is



Syme-Spence-Lister Bougie.

pushed on gently but firmly (much force is not required), the surgeon may be able to pass a full-sized bougie or catheter immediately after the withdrawal of this pioneer.”

Though I have not tried this compound bougie (*see Fig.*), it seems to have advantages which are likely to render it extremely useful in connection with some of the worst forms of obstruction.

11. Suture of ruptured urethra in the male.

Pearce Gould (*Brit. Med. Journal*, March 4, 1893) showed at the Medical Society of London a man who had sustained a complete rupture of the urethra in consequence of a fall. Immediately after the accident he attempted to pass water, but only blood came, the urine passing into and distending the scrotum. Gould passed a straight staff into the urethra as far as it would go, and then made a free incision in the median line of the perinæum. After turning out the blood he managed to find the deep end of the divided urethra, which he sutured on each side with silk sutures passed through the corpus spongiosum, but not the mucous membrane. He left a No. 8 English catheter in the urethra for eleven days, and on its removal he was able to introduce a No. 11 catheter. Since then there had been no further trouble. In the case of a man, aged 27, in whom a median perinæal incision had been made into the urethra in order to explore the prostate, the wound closed and healed by first intention, not a drop of urine escaping. He insisted upon the desirability of suturing the ends of the ruptured urethra and not leaving them to granulate, and he pointed out that it was evidently unnecessary to leave the perinæal wound widely open to ensure drainage of the bladder.

Cases of successful suture of the torn urethra furnish another reason why perinæal exploration should be adopted when the canal is ruptured at the usual position. Putting aside the question

of obtaining union in this way, there can be no doubt that the early dangers connected with the lesion, and the more remote one of a dense contractile stricture following it, are much lessened by an immediate provision for urine drainage if this is all that can be accomplished. There are several cases now recorded where perfect union followed the use of sutures in this way, and without the formation of a stricture.

12. Radical cure of hydrocele.

Surgeon-Colonel G. C. Hale writes (*Brit. Med. Journal*, April 8, 1893):—"I send herewith a list of 19 cases of hydrocele cured absolutely in one operation. The operation consisted of slitting up the scrotum and tunica vaginalis to the extent of 1 inch, letting out the fluid, and then sewing the tunica vaginalis to the outer skin and applying a dressing of carbolic oil. I did not stuff the cavity nor interfere with it in any way, as I find that this is unnecessary. The operation is as simple as possible, causes no great amount of inflammation, and is perfectly effectual. Age does not seem to be any obstacle to success, as may be seen by the list, nor does the fact of other operations having been performed. All these cases had been tapped before, some had iodine injected, but all did equally well and all are now completely cured."

This method has much to recommend it, particularly in cases where the state of the testis is doubtful, as in instances of early tubercular orchitis. In the latter, iodine is sometimes intensely irritating, and is liable, from the tension of the effusion it excites, to light up mischief in the body of the testis.

DISEASES OF THE RECTUM AND ANUS.

BY ALFRED COOPER, F.R.C.S.,

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1. The minor ailments of the rectum and anus.

In a recent communication (*Lancet*, 1892, vol. ii., p. 1,430) Rigby, of Preston, asserts that hæmorrhoids are not frequently caused by obstructed circulation through the heart, lungs, or liver, and that constipation is not so general a cause as is often alleged. He attributes much importance to careless and unnecessary prolongation of defæcation, and consequent incarceration of portions of mucous membrane within the sphincter. The mischief tends to increase and perpetuate itself, and at last a ring of congested and inflamed lining membrane becomes external to the sphincter. Thus dilated hæmorrhoidal veins result from the strangulation effected by the sphincter, and are associated with a bruised, inflammatory, and swollen condition of the mucous membrane with more or less prolapse. By way of palliative treatment, when this condition exists, the patient should be kept in bed, while two or three leeches are applied and followed by a poultice and soothing poppy-head lotion. In the course of a day or two the protruded portion can be returned. When the bowels are moved, the patient must lie on his back and use a bed-pan. After defæcation the parts should be bathed with a soft sponge and warm water and the following ointment applied: Red oxide of mercury ointment one part, spermaceti ointment three parts. This will cool and soothe the part, and will relieve hæmorrhoids and cure cases of fissure. If necessary, sulphate of magnesia with iron, or some mineral aperient water may be regularly given; rough, coarse paper for cleansing should be scrupulously avoided.

2. The varieties of piles and their treatment.

H. Allingham, at a meeting of the Medical Society of London (*Brit. Med. Journal*, 1892, vol. ii., p. 1,236), called attention to the importance of distinguishing between the different varieties of piles, which he classified as external, internal, and extero-internal. Internal piles were further divided into venous, arterial, and capillary. He expressed his preference for the method of treatment by ligature (known as Salmon's). Swinford Edwards said

that the crushing operation was valuable when time was an object, the patient being up and about in a week. In 120 cases he had adopted another plan—viz., the injection of a 5–10 per cent. solution of carbolic acid in glycerine. This gave excellent results in cases in which the pile could be reduced and kept up. Whitehead's operation was condemned by Keetley as expending the surgeon's time and the patient's blood without any corresponding advantage.

3. The operative treatment of hæmorrhoids.

Quénu, at the recent Surgical Congress held in Paris (*Lancet*, 1893, vol. i., p. 892), described his modification of Whitehead's operation, which he had performed on 10 patients. Non-union occurred in several cases, owing to the sutures cutting through the mucous flap. He proposes to make an incision between mucous membrane and skin, then to dissect away the former to a certain height. Instead of sacrificing the ring of membrane with hæmorrhoidal tissue, as in Whitehead's method, Quénu preserves it, and simply removes the venous ampullæ on the surface. He then sutures the mucous membrane to the skin, thus leaving a circle of extra-anal stitches. He claims for this modification greater simplicity of execution, and the necessity for a less severe regimen after the operation. Delorme and Reclus spoke very favourably of Whitehead's operation, and Reclus declared that he had never met with the *contretemps* mentioned by Quénu.

4. The treatment of hæmorrhoids and prolapse of the rectum by the clamp and cautery.

Henry Smith (*Lancet*, vol. i., 1893, p. 459) stated that the improvements and results of later practice had only increased his confidence in the utility and safety of the method. An experience of twenty-five years at King's College Hospital with cases of the greatest severity was not marred by a single fatality. Hæmorrhage was now a thing of the past, and pain was lessened or altogether abolished. In the earlier operations, each hæmorrhoid was separately included in the clamp, cut off with scissors, and then the cautery was applied to the stump. With large tumours hæmorrhage sometimes occurred at the time of the operation or when the bowels were first opened. He now uses cauteries with serrated edges, and at a dull red heat, and has had no trouble from bleeding for several years. Every vessel is acted upon by the cautery. As an additional improvement, he also recommends that the sphincter should be thoroughly dilated before the operation, but without actual rupture of the fibres. Each growth can then be brought down, more readily isolated and included within the clamp, and pain after the operation is very much

lessened. If the latter expectation be not fulfilled, the best plan is to apply very hot water by the aid of a small sponge. He has discarded the practice of making incisions at the base of the pile before applying the clamp. Constitutional disturbance after the operation is usually very slight. Any tendency to contraction may be obviated by not encroaching too much on healthy tissue, and not removing skin too freely. It is often well to pass a bougie of moderate size at frequent intervals for some little time after the parts have healed.

In the same volume of the *Lancet*, p. 681, **H. Allingham** questions Smith's statements as to the safety of the operation, and asserts that it is four times as fatal as any other method. Moreover, as regards the attendant pain, it contrasts unfavourably with other plans; contraction is by no means improbable, and secondary hæmorrhage is not infrequent on the separation of the sloughs. Operations with the ligature or by crushing cause less pain and after-trouble. Allingham's opinions are reinforced by the statements of patients who have been subjected to all the above-mentioned operations, and are therefore able to judge between them with regard to pain and other consequences.

At page 821 of the same volume, **Burghard** supports Smith's opinion, and states that during the last four years he has seen from 100 to 150 of Smith's cases, and has not observed any bad symptom. He asserts that secondary hæmorrhage is not more frequent than after the ligature, and asks for Allingham's figures and their sources.

In a subsequent number of the *Lancet*, p. 956, **C. P. Childe** confirms Burghard's testimony. He has seen many of Smith's cases, all operated on by clamp and cautery, without any selection of those presumably the most suitable.

As an additional contribution to the above-mentioned subject, **H. Lee** gives his experiences (*Lancet*, 1893, vol. i., p. 1,096) of the treatment of hæmorrhoids by clamp and cautery. Lee began to use this method in 1854, and claims for it the following advantages—viz., that after excision of the tumour and application of the cautery the operation is complete; no cause of irritation remains, and repair commences forthwith. It is not necessary to include all diseased or protruded membrane, or to destroy any depth of structure. A stump of a tumour does good service by keeping the parts *in situ*. Lee uses a special clamp in the shape of a long pair of scissors curved on the flat. The growth is removed with a corresponding pair of scissors, and the cautery is then applied for four or five seconds. The clamp should be very gradually relaxed.

5. Removal of the rectum for non-malignant ulceration.

F. Lange (*Annals of Surgery*, March, 1893, p. 325), at a recent meeting of the New York Surgical Society, presented a specimen of a rectum which had been removed for non-malignant ulceration. He stated that disease of that kind might still be denied by some as a possible indication for excision. The patient was a man aged twenty-six, with a history of chancroid and bubo five years previously, but no syphilis. On presenting himself in March, 1892, the rectum was found to be the seat of very extensive ulceration, and there were many ulcers round the anus and fistulous tracks. Control over the bowel was almost completely lost. After trying several other plans in vain, Lange removed the diseased portion by the usual posterior incision, and likewise extirpated the coccyx. The result proved satisfactory, though, owing to the loss of portions of the sphincter, the patient was unable to control his bowels when loose. His general health was much improved.

6. A new method of treating non-malignant strictures of the rectum by transplantation of intestine.

Bacon, of Chicago (*Annals of Surgery*, May, 1893, p. 576), describes a new method of dealing with these cases. The operation consists in completely removing a portion of a loop of small intestine that is lying in proximity to the rectum, and anastomosing each end with the latter, so as to form a new channel by the side of the stricture. The mesentery of the severed gut is left intact. The piece to be transplanted must be long enough to extend from a point below the stricture to one above it, where the rectal wall is not too much thinned by ulceration.

The operation is completed by scarifying the approximated surfaces of the rectum and the transplanted piece of gut, and suturing them together so as to have the two walls cemented into one firm septum. At a subsequent operation this latter is removed by compression forceps, and the lumen of the rectum and transplanted piece is made into one cavity; the sloughing out of the compression forceps will destroy one half of the stricture, together with the septum, thus putting an end to the contraction of the cicatricial tissue. The Murphy button is now used to make end-to-end anastomosis of the gut, from which the transplanted piece was resected, and its mesentery is carefully sutured, so as to leave no room for hernia to occur.

As a further development of this plan, Bacon proposes to draw the sigmoid down below the stricture in the rectum, and,

with a Murphy button, to anastomose it with the latter part. He claims that this method is more conservative than any other, and offers a better prospect of success.

7. The treatment of syphilitic stricture of the rectum by means of Kraske's sacral extirpation.

Herczel (*Wien. med. Woch.*, 1892, No. 27) points out that these cases are very difficult to treat, owing to the loss of substance, the infiltration of the rectal walls and surrounding parts, and the continuous tendency to cicatricial contraction. For strictures near the anus he recommends the Paquelin or galvano-cautery. If ring-shaped, the band should be excised and the mucous membrane sewn up. Long and narrow constrictions, reaching far up, cause retention of fæces, and are liable to be attended by suppuration around the bowel, pelvic peritonitis, emaciation, etc. For such cases, English operators often suggest colotomy, which is, however, a very defective substitute and only palliative. Herczel recommends Kraske's method as the best plan of treatment.

8. Excision of the rectum for malignant disease.

H. Allingham, in a paper read at the meeting of the British Medical Association in August, 1892 (*Medical Press and Circular*, 1892, vol. ii., p. 322), entered into the general question of excision of the rectum for malignant disease. He pointed out that in deciding for or against an operation certain considerations must be borne in mind. The first was the *age* of the patient, which considerably affected the prognosis. This latter is bad in patients under forty, for the growth is usually rapid, of an infiltrating character, and likely to return in a short time. Between forty and sixty, recurrence is less common, but the prognosis is not wholly favourable. In cases above sixty the operation is likely to prove advantageous; the growth is hard and the tendency to recurrence comparatively slight. Another consideration is connected with the *variety, form, and position* of the growth. Five forms may be thus discriminated—viz., (1) a wart-like growth in lower part of rectum; (2) an ulcer or depression with movable edges, generally confined to lower part, and with healthy bowel above it; (3) ulcers and nodules in lower part; (4) growth with ulceration higher up bowel, scarcely movable, and extending to surrounding tissues; (5) still higher up, very hard, movable, and intussuscepted into lower part of rectum. In the first three forms, excision is indicated if the upper limit can be reached and the growth be movable; but the operation is contra-indicated in young subjects with adherent growths. In suitable cases excision should be free, the lower

portion of the bowel being, if possible, left, in order to prevent contraction. In the fourth form excision is out of the question ; cases belonging to the fifth should be treated by inguinal colotomy and Kraske's operation. In doubtful cases the amount of adhesion to deep parts will be the guide ; excision is not indicated when the bladder or prostate is involved in the growth.

9. Excision of cancer of the rectum.

A. J. McCosh (*New York Med. Journal*, Sept. 3, 1892) discusses the questions connected with this operation. He alludes to the fact that when the disease extends higher than four inches, or when the average index finger cannot reach healthy gut above it, surgeons are not agreed as to the propriety of an operation, though in Germany such cases are treated by excision without hesitation. He mentions a case in which ten inches of the rectum were removed and the sphincters retained, the bowel being united to them by a subsequent operation. McCosh does not agree with Cripps as to the danger of drawing down the bowel. He always fastens the remains of the rectum to the margin of the wound, so as to provide a canal for faecal matter. He doubts whether special care should be taken to preserve the lower part of the rectum, and thinks that complete extirpation is generally the best plan.

10. The medical treatment of rectal cancer.

In cases in which the disease is advanced and the progress slow, Dujardin-Beaumetz (*Lancet*, 1892, vol. ii., p. 1,076) reports favourably of the plan of using antiseptic solutions to wash out the intestines ; by removing irritating secretions, these arrest, or at least retard, the progress of the disease. A solution of naphthol, 10–20 centigrammes per cent., is found to be efficacious, and the canal may be further disinfected by giving salol or benzo-naphthol with bicarbonate of sodium in wafers. Laxatives are generally required, and the diet should consist largely of vegetables. Dujardin-Beaumetz thinks that the adoption of this plan tends to prolong life beyond the interval that could be gained by an operation.

VENEREAL DISEASES.

BY J. ERNEST LANE, F.R.C.S.,

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1. The therapeutics of acute gonorrhœa.

Martin, of Philadelphia (*Jour. of Cut. and Genito-Urin. Dis.*, Sept., 1893), read a paper on this subject at the American Association of Genito-Urinary Surgeons. Briefly stated, his conclusions were as follows:—(1) The abortive treatment by means of the application of a 10 per cent. solution of nitrate of silver was advisable in the *earliest* stage of the disease, and was in some cases successful. (2) If seen in the acute stage, palliative treatment is recommended by means of mild antiseptic irrigation, with copaiba or sandal-wood internally. (3) Irrigation of the urethra by hot antiseptic lotions should be continued till the gonococci have completely disappeared from the discharge, after which astringent injections were recommended. (4) When irrigation cannot be employed, dilute injections of bichloride of mercury (1 ad 20,000) or nitrate of silver (1 ad 15,000) should be used, and the injections should gradually be strengthened until urethral tolerance is established. (5) Strong injections applied in the acute stage predispose to complications, and may prolong the course of the disease.

2. The treatment of gonorrhœa by salol.

G. N. Grivtsoff (Supplement, *Brit. Med. Journal*, Dec. 31, 1892) recommends the internal administration of salol in the dose of 1·5 gramme three or four times a day. If seen in the early stage, patients may be cured by salol alone in from ten to fourteen days; in subacute cases it may be combined with cubebs, and in the chronic form of the disease may be used as an urethral injection. The writer of this article recommended this drug three years ago, but prolonged observation has convinced him that this method of treatment compares unfavourably with the topical application of nitrate of silver solutions in varying strength.

Neisser (*Archiv für Derm. und Syph.*, 24 Jahr, 6 heft) states that in the treatment of gonorrhœa, all prophylactic and therapeutic measures must depend upon the recognition of the gonococcus by

microscopical examination. The danger of the disease is not due to the acute inflammatory condition which characterises its commencement, but to its extension to more important and less accessible organs, such as the seminal vesicles and epididymis, or the Fallopian tubes and ovaries. The main object of treatment should be to prevent the disease from extending to the posterior urethra, and to cure it before it assumes a condition of chronicity. Remedial measures should therefore be commenced as soon as possible after infection. Only those medicaments should be used which will destroy the gonococci without injuriously affecting the mucous membrane of the urethra, such as argent. nit., 1 ad 4,000 to 1 ad 2,000; ammon-sulpho-ichthyolat., 1 ad 100; or hydrarg. perchlor., 1 ad 30,000 to 1 ad 20,000. Whichever medication is selected should be used frequently by urethral irrigation, so that the mucous membrane may be effectually washed. Internal medicine, such as copaiba, cubebæ and sandal-wood, is condemned as useless; but hygienic, dietetic, and antiphlogistic measures are commended. In all cases, with the exception of those in the acute inflammatory stage, it is necessary to discover if the posterior urethra is involved, and whether its secretion contains gonococci, in which case treatment by irrigation should be adopted, or topical astringent applications carried out by means of Guyon's syringe. If no gonococci are present, irrigations are still of much service; but an examination by means of the endoscope will probably be necessary in order to ascertain the source of the discharge. The use of this instrument is, even in acute cases, attended by no danger.

3. The treatment of gonorrhœa by ichthyol.

Jaassohn (*Deut. med. Wochenschr.*, 1892, p. 850) employed solutions of ichthyol of the strength of 1 ad 50 for the anterior urethra, and 1 ad 100 for the posterior, but the strength of the solutions could gradually be increased till the tolerance of a 50 per cent. solution was produced. The drug seemed to have a strong anti-gonorrhœal action, for in almost all the cases in which it was employed a rapid disappearance of the gonococci ensued, far more so than with other remedies; and further, there was no subsequent reappearance of the gonococci. Like every other remedy, there were some cases which resisted ichthyol, but such cases were very rare. It quickly transformed a purulent into a serous discharge, and caused a shedding of large numbers of epithelial cells in which the cocci were so often found entangled. He observed that cases treated alternately by ichthyol and nitrate of silver injections took an unusually favourable course. In gonorrhœa occurring in women it was also highly spoken of, since it had yielded

excellent results in gonorrhœal urethritis, and in cervical catarrh due to the same cause. It could be applied to the cervix or the interior of the uterine cavity with a Playfair's probe.

4. The treatment of gonorrhœa by chloride and iodide of zinc.

Frank Glenn (*Jour. of Cut. and Genito-Urin. Dis.*, April, 1893) reports the result of his treatment of gonorrhœa by an injection of chloride and iodide of zinc (half a grain of the chloride and one grain of the iodide to the ounce of water). In every case the urethral discharge was examined microscopically, and was found to contain gonococci. The average length of time required for a cure was a little over sixteen days; but if three cases of a very obstinate character were omitted from the list, the average would have been reduced to under twelve days.

5. The treatment of gonorrhœal rheumatism.

R. Guiteras (*Jour. of Cut. and Genito-Urin. Dis.*, Oct., 1893) considered that the treatment of gonorrhœal rheumatism, though varied, was very unsatisfactory. Of the salicylates, he had found salol the most efficacious. Phenacetin was valuable to relieve the pain. The oil of gaultheria was of use both in the acute and sub-acute stages; it might be given in doses of from five to twenty drops in milk every two hours. Colchicum and the alkalies were also of service. Of the internal anti-blenorrhagics, copaiba, cubebs, and the oil of sandal-wood were all good on account of their action through the urine on the urethral mucous membrane. Local treatment of the urethra seemed to aggravate the rheumatism rather than benefit it. General tonic treatment might be indicated. Local treatment of the joints by counter-irritation, blisters, Paquelin cautery, ichthyol ointment (50 per cent. in lanolin), absorbents, massage or electricity, all exerted a beneficial influence. Ointments of mercury or iodide of potassium were of doubtful value. Leeches or poultices had a good effect in the acute stage. Cold applications were also very grateful to the patient during the acute stage in the mono-articular variety of the disease. When pus had formed in the joint and pyæmia was threatening, surgical treatment should at once be undertaken.

6. The treatment of suppurating buboes.

Wm. K. Otis (*Jour. of Cut. and Genito-Urin. Dis.*, May, 1893) advocates the following plan of treatment in these cases: The skin is first rendered aseptic in the usual manner; a narrow bistoury is next inserted into the abscess cavity, and the contents evacuated; the cavity is then irrigated with a solution of per-

chloride of mercury 1 ad 1,000, and filled with warm iodoform ointment introduced by means of a glass syringe. A compress of alembroth gauze is then applied, and retained in position by means of a bandage.

There is little novelty in this method of treatment, which is obviously Lister's treatment of chronic abscess adapted to this locality. The writer has used this plan for the past three years, in most cases with satisfactory results.

7. The abortive treatment of buboes.

This treatment, initiated by **Welander**, of Stockholm, and fully described in the "Year-Book of Treatment" for 1892, p. 312, has recently been adopted by **Brousse** and **Bothezat**, of Montpellier (*An. de Dermat. et de Syph.*, April, 1893). In 10 selected cases they employed Welander's preparation of benzoate of mercury, injecting half a syringe of the solution into each extremity of the gland; they then applied a sublimate compress and bandage; but of the 10 cases thus treated they had only 1 successful result; in all the others the evolution into suppuration continued, and they were eventually obliged to incise. They conclude that the abortive treatment of buboes by injection of benzoate of mercury has not the value attributed to it by Welander or Loetnik; the method was not absolutely devoid of risk; the reaction provoked thereby was often considerable, and might be dangerous.

8. The treatment of bubo by excision.

F. Sedgewick Watson, of Boston (*Jour. of Cut. and Genito-Urin. Dis.*, Feb., 1893), describes a method of treating buboes by excision, with the hope of subsequently securing union of the wound by first intention. In the operation the following rules were carefully observed: (1) To remove thoroughly all diseased tissue, and to leave, as far as possible, a perfectly healthy surface in every part of the wound. (2) To excise such portions of the skin as threatened to become necrotic, or had already become so. (3) To curette the under surface of the skin flaps. (4) To thoroughly swab the whole wound with dry sterilised gauze sponges, or sponges wet with a solution of corrosive sublimate—1 in 4,000. Precautions must be taken against wounding the femoral vessels and the spermatic cord, and when dissecting in the neighbourhood of the external abdominal ring the possible presence of an unsuspected inguinal hernia must be borne in mind. Care must also be taken to secure the divided ends of the lymphatics which are greatly enlarged, and might subsequently exude fluid into the wound cavity. The necessary incision may be made by a crescentic cut, the convexity of which was directed downwards, so that a large

flap of skin could be reflected from the surface of the diseased glands; after their removal the flap was turned down and its edge sutured on the line of the first incision. In other cases a long incision was made parallel with Poupart's ligament, and the glands were exposed by dissecting the skin upwards and downwards. This method was recommended in a modified form when the skin covering the bubo had broken down. Here elliptical incisions were made, the area of necrotic skin being included in the ellipse.

The advantage of this method of treatment over the more usual one of incising and curetting suppurating buboes, and allowing the wounds to heal by granulation, is that the patient is cured by the end of the fortnight, instead of at the end of from three weeks to two months.

9. The treatment of syphilis by hypodermic injections.

A discussion upon this subject took place at the Philadelphia County Medical Society (*New York Med. Journal*, April, 1893), the two principal speakers being Wolff, in favour of the hypodermic method of treatment, and J. W. White, who condemned it in vigorous terms.

Wolff advocated injections of corrosive sublimate, which he commenced in the inter-scapular region, and continued downwards in the posterior part of the intercostal spaces. The effect upon syphilitic sores, indurated glands, macular syphilides, and pharyngeal ulcerations was described as almost magical, these symptoms usually disappearing in the course of a week or ten days; it was also found to be of great value in cases of iritis and choroiditis, though its effect upon the papular eruptions was not so notable. A daily injection of a $\frac{1}{4}$ of a grain in a 1 per cent. solution of distilled water was employed, a syringe of m xxv. capacity being used. After eighteen or twenty injections, there was usually some tumefaction of the gums, and this was the signal for reducing the number of injections and administering them at intervals of two, three, or four days. The number of injections used in a course of treatment was twenty-five; but it might be increased to thirty or thirty-five, a good rule being to continue for two weeks after the disappearance of all symptoms. The mouth should be kept scrupulously clean, and should be cleansed after each meal and at bedtime with a soft brush and a solution of chlorate of potash $\mathfrak{z}\text{i. ad } \mathfrak{z}\text{vi.}$, with acid carbolie m i. ad $\mathfrak{z}\text{i.}$ Warm baths were recommended as adjuvants to the treatment, and cold bathing was condemned as injurious. Rapid as was the beneficial effect of the treatment, a large number of relapses occurred; in 60 per cent. no further symptoms were observed, but

the remaining 40 per cent., having undergone two, three, or even four courses of injections, had eventually to submit to systematic inunction before the tendency to relapse was overcome. In respect to permanency of cure, Wolff considered the injection of insoluble salts as superior to that of the soluble preparations. Their conversion beneath the skin into a soluble compound was slow, and consequently the injections were not required so frequently. Among the preparations of insoluble salts from which good results had been obtained were mentioned an ointment of calomel, vaseline, and lanolin, precipitated mercuric oxide, salicylate of mercury, black oxide of mercury, and the grey oil as prepared by Lang, of Vienna, one cubic centimetre of which was injected every week for the first month or six weeks. As absorption of the insoluble salts was progressive, the injections should be discontinued when the slightest affection of the gums was noticed. Wolff mentioned the relative permanency of the results of treatment by subcutaneous injection of calomel, of corrosive sublimate, and by the inunction method according to the researches of Kaposi. This observer stated the inunction method obtained the greatest number of permanent cures—viz., 75 per cent.; next came calomel injections, with a percentage of 70; and lastly, the injections of corrosive sublimate, with 65 per cent.

J. W. White stated that he had discontinued the treatment by injections, which was now not nearly so much in vogue as formerly. Though it prevailed to some extent in Germany, it was being abandoned in France, and was not extensively employed in Great Britain or in America. He was not surprised to hear of 40 per cent. of relapses, considering that the treatment only consisted of thirty-five injections of soluble, or five to six of the insoluble salts. Evidence was steadily accumulating that the number of relapses after the injection treatment was greater than with any other method. As regarded precision of dosage, it was unscientific to throw under the skin an emulsion of metallic mercury with lanolin, or of calomel and yellow oxide of mercury, and to allow it to remain there subject to different degrees of inflammatory action and the differing capacity of absorption of the various patients. It might produce violent stomatitis, dangerous salivation, enterocolitis with bloody stools, and, where vaseline or fatty preparations were used as vehicles, pulmonary embolism. Occasionally it remained inert for some time, and then suddenly became absorbed in large quantities with the development of violent symptoms of mercurial poisoning. The pain after the injections was very severe, no matter what preparation was used, and a certain percentage of abscesses followed, however careful or

skilful the operator. White considered that this treatment should be held in reserve for those cases where every other method had failed, where the gastro-intestinal tract rebelled against mercury internally administered, or where inunctions produced violent dermatitis. If rapid mercurialisation were required, small doses of protiodide of mercury, calomel, or grey powder might be supplemented by simultaneous inunctions.

10. The occurrence of pulmonary emboli after injection of insoluble salts of mercury.

Blaschko (*Deutsche med. Wochens.*, 1892, p. 965) noticed that after injections of salicylate of mercury suspended in liquid paraffin certain grave pulmonary complications ensued which could only be attributed to the formation of embolic infarcts in the lung. In several instances he had noticed that the injections were followed by violent paroxysms of coughing, but three cases had occurred in which emboli of the paraffin had undoubtedly taken place. The symptoms were violent cough, difficulty of respiration, pain in the chest, cyanosis, immobility of the thoracic parietes, loss of the respiratory sounds, bronchial breathing, with copious mucus and sanguinolent expectoration. These symptoms could only be explained on the hypothesis of pulmonary embolism from penetration of the syringe into a large muscular vein, and transmission of the paraffin by the veins into the pulmonary circulation.

11. The injection of large doses of mercury in syphilis.

Horovitz (*Centralbl. f. d. Therap.*, March, 1893), after naming the objections to the subcutaneous mercurial treatment of syphilis, describes a case in which a patient, long after apparent cure by this method, presented fresh symptoms in the scrotum and tongue. On resuming the former treatment, the author noticed in three places on the buttock somewhat marked resistance to the introduction of the needle, owing to the thickening of the skin produced by former injections. The third injection produced in a few hours severe inflammation of the buttock, which was not very amenable to treatment, disappearing, however, in course of time. Subsequently marked salivation, accompanied by other evidence of mercurialism, set in, on the subsidence of which symptoms, considerable improvement was noticed in the condition of the scrotum and of the tongue. In the course of four more days all the signs of the syphilis and of mercurialism had disappeared, three injections, or about three-quarters of a grain of perchloride of mercury, having been used in all. In explanation of this occurrence, the author opined that old accumulations of mercury remained from former

operations, and that these "depôts" were liberated by the renewed introduction of the needle. A large quantity of mercury was thus suddenly introduced into the system, which not only cured the syphilitic symptoms present, but also induced mercurialism. The conclusion at which the author arrived was that subcutaneous doses of mercury were but slowly absorbed, which induced him subsequently to use doses of up to half a grain, whilst reducing the frequency of the injections.

12. The effect upon the offspring of mercury administered to pregnant syphilitic women.

Etienne (*Therap. Gazette*; and *Clin. Journal*, May, 1893) states that the mortality of infants born of syphilitic mothers who have not been subjected to mercurial treatment is enormous—over 76 per cent. at birth, and over 95 per cent. when the few children born alive were kept under observation. When the mothers had been subject to anti-syphilitic treatment this mortality dropped to from 11 to 16 per cent. If the treatment was pushed during the course of pregnancy, statistics showed that it was reasonable to hope that very few, if any, of the children would perish. Of 10 cases observed by the author, not a single infant died. Eighty per cent. of the infants were born at term. Syphilis exerted its most pernicious influence upon the offspring during the fifth, sixth, and seventh months of intra-uterine life. From personal observation Etienne concluded that paternal syphilis was distinctly less pernicious in its effect upon the offspring than was that derived from the mother. When the mother became infected during the first three months of pregnancy and was not treated, the results to the offspring were worse than when the disease was acquired later; in such cases a mortality of 100 per cent. was reached. When infection occurred during the fourth and fifth months, the results were somewhat more favourable. When the mother became infected during the eighth month, an apparently healthy infant might be born, although in one case reported by the author, in which infection apparently took place in the eighth month, the infant was seemingly healthy at birth, but later developed syphilitic lesions. In all cases of syphilis acquired during pregnancy, prompt treatment was most efficacious. Cassowitz stated that of 35 syphilitic women who were treated by inunctions the delivery was normal in all. Of 23 treated by inunctions and iodide of potassium, 37 per cent. were delivered before term. Of 19 treated by iodide of potassium and bichloride of mercury internally, 15 per cent. gave birth before term. Of 17 treated by iodide of potassium alone, 40 per cent. were delivered before term.

13. The treatment of cerebral syphilis by injections of grey oil.

Sacaze and Magnol (*Ann. de Derm. et de Syph.*, Aug. and Sept., 1893) recommend in cases of cerebral syphilis the injections of grey oil as practised by Lang of Vienna; the composition of this substance was mercury, 20 grammes; lanolin, 5 grammes; and liquid vaseline, 35 grammes. The authors considered that the treatment by this preparation had much to recommend it, amongst its principal advantages being the rapidity of its action and the facility with which it could be administered to those who wished to hide their disease. The disadvantages were the pain following its introduction, local abscesses, mercurialisation through the employment of too large a dose, and pulmonary embolism. For these reasons Fournier would only sanction the injection treatment under the following conditions: where all other methods had failed, and where an immediate effect was desired, as in cases of cerebral syphilis. The authors had met with the most favourable results from the injection of this substance in 3 severe cases of cerebral syphilis, and their recommendation seems only to apply to this phase of the disease. They limited the dose to 5 or 7 centigrammes every eighth or tenth day, and with these doses had not experienced any of the ill effects of mercurialisation; stomatitis was guarded against by the frequent use of astringent gargles; they had met with no cases of pulmonary embolism, and in their opinion the only drawback was the pain. These injections were of the greatest value in cases of cerebral syphilis, on account of the rapidity of their action, and by their remarkable influence on the symptoms of syphilis, they might clear up a doubtful diagnosis. They considered this treatment superior to that by inunction, since after injections mercury appeared in the urine in a far shorter time than after the latter method.

14. The treatment of syphilis by mercury and hot baths.

Wm. Alexander (*Brit. Med. Journal*, Feb. 11, 1893), while fully recognising the efficacy of the treatment of syphilis as practised at Aix-la-Chapelle, considered that such treatment could be equally well carried out in England. He had treated many severe cases by mercurial inunction and hot baths made to simulate the water of the Aachen springs, giving in some cases as many as forty rubbings, without any untoward symptoms or inconvenience from the mercury, and with the greatest benefit to the patients. For all practical purposes the thermal waters of Bath were identical with those of Aix-la-Chapelle, and the author

consequently considered that town an eminently suitable winter health resort for intractable cases of syphilis.

Writing on the same subject, **A. S. Myrtle** (*Brit. Med. Journal*, Feb. 18, 1893) endorsed the above-mentioned remarks; the waters of Aix-la-Chapelle were very weak sulphurous springs, identical with the mildest sulphur springs of Harrogate; they varied in temperature from 114° to 170°, and resembled the Bath waters in being thermal, but in nothing else. The main feature of the treatment at Aix was the thoroughness of the inunction, which was performed by highly-trained men and women. Myrtle had treated a great number of cases by inunction, in combination with the Harrogate sulphur waters and baths. The result had been most satisfactory, and a much more rapid improvement was found when the waters supplemented the rubbing than when mercury alone was employed; this was especially the case when the mucous membranes were affected.

15. Europhen in venereal affections.

Kopp (*Therap. Monatsh.*, March, 1893, and *Brit. Med. Journal* Supplement, May 13, 1893) has recorded his experience of europhen in venereal diseases. Europhen is an odourless powder, producing no irritation, which the author generally used mixed with boracic acid for economical reasons, but which, when undiluted, led to no unpleasant consequences. In cases of soft chancre, the author, having scraped the sore, and arrested all hæmorrhage, applied the powder to the raw surface, and allowed it to dry thereon, the scab not being removed, but fresh powder being added twice daily. Healing took place in all cases in from four to ten days. In one case an inguinal abscess formed which required opening, but which healed in less than three weeks. In some cases of a less urgent nature, the scraping of the sore was omitted, and after it had been thoroughly cleansed with a solution of corrosive sublimate, the powder was applied. Sloughing buboes were treated on the same lines, the bases being scraped with a sharp spoon, and the overhanging skin being removed. The author concluded that europhen was a most valuable substitute for iodoform in venereal sores, and was particularly beneficial when it could be brought into contact with a damp secreting surface.

16. Treatment of syphilitic ulcers.

V. T. Svertchkoff (*Vratch*, No. 38, 1892, and *Brit. Med. Journal* Supplement, Dec., 1892) states that inveterate or obstinate syphilitic ulcers of any kind should be treated as follows: The lesion should be thoroughly cleansed with a 2 per cent. solution of hydrogen peroxide, then dried with absorbent cotton wool, and covered with a piece of wool soaked in a 1 to 2 mixture of carbolic acid and

camphor. The dressings should be changed two or three times a day. In from three to five days the ulcer became cleaner, and studded all over with abundant succulent granulations. After this it should be dressed twice daily, either with a 1 to 4 mixture of aristol and vaseline oil, or with a mixture of dermatol and vaseline in equal parts, the layer being covered with a piece of mercurial plaster twice as large as the ulcer. Rapid cicatrisation ensued, the lesion healing soundly, according to its size, in from fifteen to forty days from the commencement of the treatment. The author mentioned that in his hands the campho-phenol mixture alone proved of great service in cases of simple ulcers, suppurating wounds, soft chancres, and chancroid buboes.

17. The treatment of chancroids.

Balzer (*Jour. of Cut. and Genito-Urin. Dis.*, March, 1893) thus describes his treatment of chancroids at the Midi Hospital: (1) The most scrupulous care as to cleanliness; asepsis as complete as possible about the sore, and local hot baths of a temperature of over 90° F. (2) After the local bath, caustic application with solutions of chloride of zinc, nitrate of silver, phenic acid, etc., or a paste containing 1 part of chloride of zinc, 9 parts of oxide of zinc, and a sufficiency of water; these caustics should be applied as frequently as is necessary to destroy the virulence of the chancre and transform it into a simple wound. (3) When this effect has been obtained, and in the intervals of the caustic applications, antiseptic dressings such as iodoform, aristol, or nitrate of silver; at the same time the patient must remain as quiet as possible, and avoid any irritation of the chancroid which might tend to the formation of a bubo.

THE DISEASES OF WOMEN.

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I.—DISEASES OF THE UTERINE APPENDAGES.

1. The treatment of disease of the uterine appendages.

During the year some valuable publications have appeared bearing on this important subject.

The operative cure of inflamed Fallopian tubes is an achievement which will always be associated with the name of **Lawson Tait**. Before his time these diseases were looked on as museum curiosities, capable of doing mischief, but not to be found out until after death. Tait showed that they were common; that they often caused chronic ill-health, besides (as was already known) sometimes being fatal; that they could be cured by operation; and that this operation, in the hands of a competent operator, was attended by a very small mortality. Tait's energy and activity, however, led to his hands being so full of work that he had not the time to publish full reports of his cases, or even to revise his statistical tables carefully. Hence on some important points no information is to be gained from his publications, and the keen scrutiny of his critics has detected inaccuracies in some of his statistical reports that have been magnified into reasons for not accepting the main results.

It has been urged that the mortality from diseased Fallopian tubes has been exaggerated; that the death-rate from the operation is really larger than the advocates of operation assert; and that the cure by operation is neither complete nor lasting.

An important letter from **Galabin** has appeared in the *Lancet* (Nov. 11, 1892). He examined the Guy's record of 302 autopsies on females. Tubal disease was present in 26, or 8·6 per cent.; and it was the primary origin of fatal disease in 7, or 26·8 of those with tubal disease, 2·3 per cent. of the total deaths.

This unimpeachable piece of evidence is in harmony with other evidence already before the profession, and shows that tubal suppuration is not a trivial malady, and that the assertions of Tait as to its danger are not wide of the truth.

Reports of operations have been published which show that the removal of diseased uterine appendages has been accomplished with a very low mortality in other places than Birmingham. Thus at the German Congress of Gynæcology held at Breslau in May last **Schauta** (*Medical Week*, June 16, 1893) reported 216 operations of removal of the uterine appendages for inflammatory disease, with 13 deaths, or 6 per cent. This author urges that if when the abdomen is opened the tubes are found distended, they should be aspirated, and the pus examined bacteriologically. If the pus contains bacteria, the abdominal cavity should be drained. Out of his 216 operations, in 144 there was either no pus or the pus was aseptic. Of these, 4 died, a mortality of 2·8 per cent. The after-history was known in only 97. Of these, 81 were cured, 12 improved; in 4 there was no relief. In 33 cases the pus contained gonococci. In 16 of these the abscess was removed without the escape of any of its contents. These all did well. Of the other 17, 2 died. The after-history was only known in 18. Of these, 17 were cured and 1 improved. In 12 cases the pus contained strepto- and staphylo-cocci. One of these was removed intact; in the other 11 the pus escaped into the peritoneum. Six of these were drained, with 5 cures and 1 death. The belly was closed without drainage in the other 5, with 3 recoveries and 2 deaths. In 2 of the 3 which recovered pelvic abscess formed. Details of the remaining operations are not given, perhaps because they were done before the institution of the bacteriological examination. **Schauta** says it only takes about five minutes. He thinks it materially assists the prognosis. He has not practised removal of the uterus for pelvic suppuration, as recommended by **Pean**, **Segond**, and others (see "Year-Book," 1893, p. 309). If the tube contains micro-organisms he thinks it better practice to remove the tube entire than to resect it (see **Polk**, "Year-Book," 1893, p. 316). **Martin** has abandoned drainage entirely. If there is the slightest suspicion that the pus may be infective, the tube should be removed entire. If not, the tube should be opened, washed out, and resected, after scraping the mucous membrane if necessary. He has done this in 40 cases, with 2 deaths. **Chrobak** reported 147 operations, with 5 deaths, a mortality of 3·4 per cent. He, and also **Zweifel** and **Kaltenbach**, thought the bacteriological examination proposed by **Schauta** of little use, on the ground that it was not possible in five minutes to find out whether pus is infective or not. I cannot but think that **Schauta** underrates the difficulty of identifying the different species of pathogenic micrococci. **Zweifel** has performed 140 operations, with only 2 deaths—1·42 per cent.—one

of these deaths being a case of resection of the tube. He never uses drainage.

Pozzi (*Nouvelles Archives d'Obst. et de Gyn.* Supplement, p. 176) stated that he had performed 205 laparotomies for inflammatory disease of the uterine appendages, with 4 deaths. In 123 of these suppuration was not present, and they all recovered. In 82 there was suppuration, and 4 of these died. Pozzi operates by a small incision, breaking down adhesions by touch. If he fears oozing, he drains with iodoform gauze. He never uses sponges, but always compresses of aseptic gauze.

Terrier and **Hartmann** (*ibid.*, p. 179) relate 59 cases, with 7 deaths, or about 12 per cent. The greatest mortality was with the earlier cases, increasing experience bringing greater success. They have been able to follow the after-history in only 46 of them, and of these, 42 "have not suffered since the operation." The only inconvenient result that they have had has been the persistence of a fæcal fistula. This happened in 6 cases. These they hope to be able to cure, if the patients will allow it. They infer that if the patients will not re-enter the hospital to have the fistula cured, it cannot be a source of great suffering. In 6 others there were fæcal fistulæ which remained open from a few days to several months. In 2 others a suppurating fistula remained open eleven and thirteen months respectively, then healing spontaneously, the patients being cured.

Delagenière (*ibid.*, p. 186) reported 22 cases of laparotomy, with 1 death (4 per cent.). The after-history was followed up in 20; of these, 15 were completely cured.

These figures sufficiently show that diseased uterine appendages can be removed with but a small mortality; and Galabin's figures show that, granting the diagnosis to be accurate, a patient with suppurating Fallopian tubes incurs more danger by expectant treatment than by operation. The question is, Can suppuration of the tubes be diagnosed with accuracy? If not, a great number of unnecessary operations will be done by those who think the early removal of such tubes the proper treatment. Secondly, is pelvic peritonitis, secondary to disease of the Fallopian tubes, really cured if the patient recovers from the operation? Do not many such patients still suffer pain after the operation as before it? Do not such patients get fresh attacks of pelvic peritonitis, even though their tubes and ovaries have been removed?

Some information in reply to these questions may be got from the statistics just quoted; and other facts will be found referred to in the "Year-Book" for 1892, p. 331. But one of the most important papers that have yet appeared is published in the

Obstetrical Transactions for 1892. It is by Cullingworth, and is "on the value of abdominal section in certain cases of pelvic peritonitis." The title of Cullingworth's paper indicates that he frankly accepts the fact that in many cases an exact diagnosis cannot be made. His position is that pelvic peritonitis is the one condition common to all these cases; underlying the peritonitis, especially when recurrent, there is disease which needs surgical treatment. The fact of recurrence shows persistent irritation, and the source of irritation is often deep-seated suppuration, either in the tube or in the ovary, or in both. The cases in which this inference may be drawn and operation practised are those in which there is a definite swelling in one or both sides of the pelvis.

In support of these views he gives 50 cases, related in chronological order; so that there is no duplication of successful cases in different tables. They were all treated in St. Thomas's Hospital, under the eyes, therefore, of medical students, the most keen and impartial critics that he could have found. A reader, therefore, who may not know from personal acquaintance how careful Cullingworth would be to avoid statements not in exact accordance with facts may accept these cases as correct in every detail. I do not know that so large a collection of fully reported cases has been published before. Moreover, the word "cure," ambiguous enough in ordinary literature, is not used by Cullingworth. He has taken pains to follow up his cases, and he states their condition at the latest date at which he has been able to see them.

Out of the 50 cases, in 19 there were ovarian tumours which were either inflamed or suppurating. In 30 cases there was suppuration somewhere, either in tube, ovary, or pelvic peritoneum. Now, everyone who has seen much of the diseases of women knows that cases of pelvic peritonitis with a swelling on one or both sides, ending in practically complete recovery, are common. If suppuration is present in three cases out of every five of inflammatory lumps in the pelvis, it is clear that suppuration in the peritoneum may undergo natural cure; and the frequency with which the effects of old inflammation are seen in post-mortem examination is in harmony with this. Cullingworth calls attention to one important point, which I have myself repeatedly observed—that in suppuration of ovarian cysts the temperature may be normal for weeks together. The mortality of these operations, in Cullingworth's hands, was as follows:—In the first twenty-five, 7; in the second, 2; in the third, 4; in the last, none. (A brief account of the second 50 cases is given in a postscript to the paper from which I quote.) This shows how the mortality diminishes with

the increasing experience of the operator. Turning now to the results in the 41 who survived, I find that one died twelve months afterwards from cancer of the stomach, and the after-course of 8 could not be traced. This leaves 32. Fifteen of these were kept under observation for a year or more, and were in perfect health when last seen. Eight others were also restored to good health, but had not been watched for so long as a year. On the other hand, 5 had suppurating sinuses for a longer or shorter time, 4 had hernia, and 2 required a second operation. One of these was a case in which the first operation consisted simply in opening an intra-peritoneal collection of fluid and draining it. The patient remained well for four years and a half, and then began to suffer again, so that the uterine appendages on one side had to be removed. This was a case of which I infer from Cullingworth's reply he is not very proud. In a similar case in the future he would more carefully examine the condition of the uterine appendages, and if diseased, remove them. In the other case both tubes and ovaries were removed, but seven months afterwards another operator removed a broad-ligament cyst. This can hardly be regarded as a failure of the first operation. It seems to me that the fact that in 15 cases out of 32 the cure was complete and known to have lasted more than a year is a sufficient justification for looking on these operations as sound surgery. Unless pelvic surgery prove an exception to every other kind of surgical practice, as experience accumulates diagnosis will get more and more accurate, and the cases which can be cured by operation will be picked out with greater and greater certainty. The point in which I think Cullingworth's practice, as displayed in this first 50 cases, most open to criticism is in the short time that nature was given to see what she would do. My opinion is that some, not many, of Cullingworth's cases would have got quite well without any operation if this had been postponed for a few weeks. Cullingworth would probably with reason have replied that had he made a rule of waiting, while some cases might have recovered, in others the operation might have been performed too late. I know no paper on the subject which will so much help forward accurate diagnosis as this of Cullingworth's.

2. The opening of pyosalpinx into the vagina.

Winter (*Zeit. für Geb. und Gyn.*, Bd. xxv., S. 352) communicated to the Berlin Society for Midwifery and Gynæcology a paper on Operation for Perforating Pyosalpinx. By the latter term he means cases of pyosalpinx which have opened into the vagina. Speaking in the beginning of his paper about the removal of suppurating tubes by abdominal section, he says that only one

circumstance opposes the more frequent performance of these operations—viz., the fact that only some of the patients are restored to health by it; some are only improved, and a not inconsiderable number—according to his experience, about half—either suffer just as much or rather more. At present the removal of diseased tubes is only justified if the tubal disease has resisted thorough and prolonged medical treatment, and the severity of the accompanying peritonitis, with the frequency of its recurrence, is an imperative indication. The perforation of pyosalpinx, either externally through the abdominal wall, or into the vagina, bladder, or rectum, Winter regards as one of its gravest complications. He refers to a paper by Veit (*Zeit. für Geb. und Gyn.*, Bd. xvi.) as having shown that the perforation of pyosalpinx, especially externally or into the vagina, is not a desirable event: that it does not lead to recovery (as in the case of an abscess of the pelvic cellular tissue), but inaugurates a new and much worse stage of the disease, the chief risk of which is the loss of strength from the protracted suppuration. A prominent feature of such cases is the continued discharge of exceedingly offensive pus. (I have read Veit's paper. It is based on only 4 cases, and in only one of these was the diagnosis verified that the suppurating cavity was a Fallopian tube. In this case there was a uterine myoma. Dates are not completely given, but it seems as if the conclusion that the opening would not lead to cure was reached three weeks after the formation of the opening; and it is stated that the presence of the myoma prevented proper drainage of the cavity. One of the other cases was a tubo-ovarian cyst; the other two might have been suppurating cysts.) Winter accepts Veit's conclusions, and argues that the treatment of a pyosalpinx that has perforated ought to be more energetic than that of one that has not; for that these cases seldom end in spontaneous cure. He relates four cases in which he acted upon this view. They were all cases of large collections of pus, in which, therefore, although there was an opening into the vagina, yet free drainage of the suppurating cavity was not attained. Although in each case it is stated that the large suppurating cavity was a Fallopian tube, yet the facts upon which this conclusion is based are not stated. Knowing how difficult it often is to make out the anatomical relations of a large extensively adherent suppurating cavity, I cannot help a little doubt as to whether these cases may not have been suppurating cysts.

The difficulty of coming to a right conclusion on the question will be appreciated if Winter's paper is compared with that of Landau ("Year-Book," 1892, p. 325). I think Landau more likely to be right in this matter than Winter.

3. The etiology of hæmatosalpinx.

This is the subject of a paper by Cullingworth, which is the most solid contribution to the elucidation of the subject that has yet appeared. Even this paper adds less than could be wished to our knowledge; but as it adds something, we must be grateful for it. It is an analysis, undertaken with a view of throwing light on the etiology of the disease, of 17 cases in which the presence of hæmatosalpinx was verified by operation. In 2 cases out of 17, the hæmatosalpinx was an unruptured tubal gestation with apoplectic ovum. In 10 cases, although examination failed to detect any evidence of pregnancy, yet the clinical history pointed "unmistakably," in Cullingworth's opinion, to tubal gestation. One of these specimens was exhibited to the Obstetrical Society of London, and an opening in a varicose vein demonstrated. At that time Cullingworth thought this rupture of a vein was sufficient explanation of the hæmorrhage. But he now says, "further experience, however, and more mature reflection have caused me to alter my opinion. The clinical history points so strongly to tubal gestation that the discovery of a ruptured varicose vein in the tube wall seems insufficient to discredit the evidence it affords." He argues that the two conditions are not incompatible; there had been clinical evidence of tubal gestation; and what condition is more likely than pregnancy to have given rise to venous enlargement? Two cases, in one of which 30 ounces of blood had been effused into the abdomen, Cullingworth classifies as "evidence inconclusive," although some of the facts are in favour of their being due to tubal gestation. Of the remaining 3, one was believed to be due to salpingitis, one was associated with malignant disease of the adjacent ovary and pelvic inflammation, and the other occurred along with gestation in the opposite tube.

I think Leopold's experiments on animals, showing how quickly an early foetus can be absorbed by the peritoneum, as well as the numerous clinical facts, justify Cullingworth in believing that in his cases gestation was present, although the foetus could not be found.

4. The removal of the ovaries in the insane.

Goodell, at the International Medical Congress of 1881, expressed his opinion that the ovaries ought to be removed from all insane women. One reason for this was to prevent them from propagating children with a tendency to insanity. But many persons have thought that the sexual disorders of women are responsible for some cases at least of insanity. If this belief be true of many cases, it follows that benefit might be expected from an operation which arrests the functional activity of the organs

primarily at fault. In the *American Journal of Obstetrics*, 1892, we find two papers in which this hypothesis is brought to the test of experience. The first is by George H. Rohé. He examined 35 insane women, in 26 of whom, or 74·3 per cent., he found some pelvic disease or abnormality. In 18 of these, he judged that the removal of the uterine appendages was the best treatment. Six of them were cases of *melancholia*. The result was that in all of them "considerable improvement has followed;" but "none of the cases have improved sufficiently to justify discharge as cured." One was a case of *mania*. This patient was improved, but not enough to be discharged. Four were *puerperal mania*. Two of these were improved, but not cured; and 2 left the asylum quite well—one two months, the other nine months, after the operation. One was a case of *hysterical mania*. This patient's mental state was much the same after as before the operation. Two were cases of *periodic mania*. In neither was there any definite improvement. One was a case of *hystero-epilepsy with mania*, who had been violent for seven years. This case was a brilliant success. Six months after the operation the patient was earning her living outside the asylum. The remaining 3 were cases of *epilepsy*. Two of these died; the remaining one showed marked improvement three months after the operation.

The second paper is by W. P. Manton. He has performed seven abdominal operations in insane women. In one he removed the appendages for *masturbatic insanity*. In this case the masturbatic habit was not cured, but lessened, and the patient's physical condition improved. In another, a case of *recurrent mania*, the same operation produced "decided benefit," but not cure. In a third case, of *petit mal with dementia*, no appreciable improvement occurred in consequence of the operation. Of 2 cases in which ovariectomy was performed, one was benefited, both mentally and physically; the other died. A sixth case, of *epilepsy, dementia, and ventral hernia*, was treated by operation for the ventral hernia. As a result, her mental condition was decidedly improved. The last case was one of *paranoia*, with a fibroid of the abdominal wall. Removal of the tumour did not in any way ameliorate her symptoms. Manton's general conclusion is that "abdominal operations in suitably selected cases of insane women may do great good." Few will quarrel with this cautious dictum; but the question is, What are the suitable cases? Most physicians would, I think, approve Manton's conduct in curing the patients of tumours and hernias, notwithstanding their insanity. But cases of removal of ovaries and tubes, not requiring removal because they are diseased, but removed in order to annul

sexual activity, are quite different. Out of the 21 cases I have quoted, there is but one in which cure, that could be put down to the operation, was the result. It seems to me that the improvement spoken of in so many might have been expected from asylum treatment without operation. Puerperal insanity is known to be *the* form which most often ends in recovery.

5. Ligature of the pedicle in ovariectomy.

Doran (*Obst. Trans.*, vol. xxxv.) has written an excellent paper in which the different materials and methods used in ligaturing ovarian pedicles are fully discussed, and the various published cases in which ill results have seemed to be the result of ligature are quoted and criticised. His conclusion is that "there can be little doubt that the best way to secure the pedicle of an ovarian tumour is by the ligature." Silk should be used. China twist is better than floss silk. The ligature should not be too thick—No. 4 is thick enough for a very stout pedicle; No. 3 is, as a rule, sufficient. Too thick a ligature does not make a deep enough groove in the tissues of the pedicle, and thus the tissues of the pedicle do not so well bulge over it and come in contact with one another. Whenever the pedicle is broad or short, its outer border should be secured separately with No. 1 or No. 2 silk. Floss silk is more liable to slip than China twist. Fancy knots should be avoided, for where the threads wind repeatedly in and out they fray one another, and thus the silk is apt to break. Carbolised catgut is absorbed too quickly, and is therefore dangerous. Chromic gut and silkworm gut are absorbed too slowly. Boiling silk makes it liable to snap. The transfixion of a vein is a distinct danger; fatal phlebitis may result. The practice of leaving the ends of the ligature uncut, and pulling on them to raise and inspect the pedicle at the end of the operation, is a bad one. The proper way is to apply forceps, one at each end of the pedicle, by which it can be lifted up if needful, and to cut short the ends of the knot directly it is tied. The Staffordshire knot is bad because the loop, when being slipped over the tumour, may get contaminated with noxious stuff, and also because it is difficult to tie firmly, and therefore apt to slip.

II.—DISEASES OF THE UTERUS.

The papers that I shall first quote bear on the important subject of the best treatment of uterine cancer. This treatment is unquestionably its early and complete removal. The question is, What is the safest and most effective way of doing this? This can only be answered by experience. I quote first some statistics

as to the now largely practised vaginal operation, and then some accounts of a newer method.

1. The mortality of vaginal hysterectomy.

John Byrne, in his presidential address to the American Gynæcological Society (*Amer. Gyn. Trans.*, vol. xvii.), has collected and compared the statistics of various operators, and the different statistics published at different times by the same operators (in some of which, unfortunately, he is able to point out apparent discrepancies), with the view of determining what is the real mortality of this operation. He has collected (p. 36) 1,273 cases, with 186 deaths, or an average mortality of 14·6 per cent. His address contains much acrimonious criticism of those who do this operation. He formulates nine propositions about it, one of which is to the effect that it is not a safe or a useful operation, and as such is unjustifiable. After thus disposing of the practice of the chief gynæcologists of Europe, he advocates an operation of his own—viz., the amputation of the cervix by the cautery knife. This, he says, is “free from danger, a safeguard against all infection, traumatic or septic, and, what is of still greater importance, it is destructive to latent cancer-cell proliferation in tissues far beyond the line of incision.” The adoption of this operation is, in Byrne’s opinion, “a moral obligation.” After the address, is printed a paper in which Byrne describes his operation. It seems to me to be the same thing as the well-known supravaginal amputation, with the difference that instead of using a cutting instrument, and securing the vessels with forceps or ligatures, Byrne divides the cervix with the cautery, and trusts to it to stop bleeding. Byrne does not adduce any evidence of the superiority of his operation. In the surgery of parts other than the uterus, the cautery has long given place to the knife and the ligature, by which the surgeon can do what he wants with a precision not attainable by the cautery. I am not therefore convinced that any moral obligation is yet laid upon gynæcologists to adopt Byrne’s operation. His statistical table is very valuable, as showing what has been attained in reducing the general mortality of hysterectomy; but I think the mortality would be much less than this were we to take only the complete operations of skilled operators, not operations done by beginners, or in cases in which the possibility of removing the disease was doubtful.

H. J. Boldt (*Amer. Gyn. Trans.*, vol. xvii.) discusses vaginal hysterectomy for cancer. He handles statistics in a different way from Byrne; for he takes, not the aggregate mortality of operators, good and bad, experienced and inexperienced, but the

results attained in a few large clinics by practised and skilful operators. Their mortality he finds to be 8·4 per cent. He quotes some statistics of individual operators whose mortality is about 5 per cent. He believes that "as the technique is improved and the experience of individual operators grows, the mortality rate will constantly diminish; so that eventually, I hope, the operation in experienced hands will come down to 3 or 4 per cent. mortality in immediate results. But this is not all; by experience in technique and *early* recognition of the disease the statistics of remote results must necessarily improve also." Boldt is strongly against incomplete operations. If the whole of the cancer is not removed, the patient is worse after than before the operation. He advocates removal of the whole uterus in all cases except those in which the cancer is limited to the vaginal portion. Boldt's own experience comprises 44 cases, with 3 deaths. A discussion followed Boldt's paper, in which there was a free interchange of opinion as to the details of the operation, from which the reader may gain some useful hints, but which cannot profitably be quoted in the form of an abstract.

2. The sacral method of extirpation of the uterus.

The mode of getting at the uterus by cutting between the sacrum and the ischium, proposed by **Otto Zuckerkandl** and carried out by **Hochenegg** and others, has been little, if at all, practised in England. For this reason I quote papers on the subject by **Herzfeld** (*Cent. für Gyn.*, 1893, Nr. 2), who has, as he considers, improved it.

Herzfeld's operation is as follows, minor details being omitted:—With the patient in Sims's position, he cuts from the right posterior inferior iliac spine, parallel with the sacrum, ending about two-fifths of an inch from the anus. Cutting down to the bone, he lays bare the coccyx and last two sacral vertebræ. The sides of the wound are held apart with retractors, the coccyx bent in so as to make the sacro-coccygeal articulation prominent, and then the joint opened and the coccyx removed. About two-fifths of an inch of the sacrum may be chipped off with bone forceps if thought desirable. A piece of this size may be removed without touching the last sacral foramen. But it is not necessary to remove more than the coccyx. This done, the pre-vertebral fascia lies exposed. This is slit up carefully on a director. Bleeding vessels are then secured. The right side of the rectum is now visible. The greater part of the circumference of the bowel is to the left, quite out of the region of the wound. The vagina is seen close to, but at its upper part to the right of, the rectum. The vagina is separated from the rectum by tearing with the finger. A finger

is then put in the vagina, and by it the situation of the posterior fornix is indicated to the operator. Thus guided, he pinches up a fold of Douglas's pouch and opens the peritoneum. He puts his finger in the opening made, hooks it over the fundus uteri, and brings the fundus out through the wound, with its anterior surface looking upwards. The uterus, tubes, ovaries, broad ligaments, vesico-uterine folds of peritoneum, and round ligaments, are now clearly seen, and the uterine arteries and ureters can be felt. All steps of the operation up to this point can be completed in ten minutes. The broad ligaments are now tied in three pieces, just as in the removal of a tumour. These are next divided, and now the uterus can be pulled far outside. With the scalpel the peritoneum in front of the uterus is next divided, and then the uterus is only connected to the bladder by loose connective tissue, which can be broken down by the finger. This done, the peritoneum attached to the bladder is sutured to the peritoneum of Douglas's pouch, so as to quite close the peritoneal cavity. The uterus is now attached only to the vagina and the cellular tissue containing the uterine arteries. These are isolated with forceps, and separately tied. This done, the vaginal attachment of the uterus is severed with scissors, and then the vagina sewn up with Lembert's suture, so that the mucous edges are inverted. A funnel-shaped wound is thus left, at the bottom of which lie the peritoneal suture and the vaginal suture. It is dressed by filling it with iodoform gauze. Herzfeld relates three cases—all successful.

In a paper containing the above description of the operation Herzfeld expresses the opinion that for cases of cancer of the cervix, in which the uterus is movable and not too large, and the parametria are free from disease, vaginal operation is a more rational proceeding than removal by the sacral method. But in cases in which the uterus is much enlarged, the vagina involved, the uterus fixed by para- or peri-metric adhesions, or the cancer has begun to invade the parametria, then the sacral method is the best. It is simple, hæmorrhage can be better controlled, and the peritoneum is shut off and left quite free from any fragments of cancer tissue.

In a later communication (*Arch. für Gyn.*, Bd. xlv., S. 553) he says that the expectation that by his method cases could be cured in which cancer had advanced so far as to be impossible of removal by other methods has not been fulfilled. The sacral operation has not widened the indications for operation in cases of uterine cancer. It is preferable to the vaginal method when the uterus is very large or the vaginal orifice very small, and in cases

of extensive cancer of the body in which the uterus is likely to break down when pulled upon.

Georg Abel (*Cent. für Gyn.*, May 13, 1893) writes on the technique of and indications for the extirpation of the cancerous uterus by the sacral method. He relates 8 cases. In the later ones he adopted some of Herzfeld's modifications. Many objections, he says, have been raised against the sacral method of removing the uterus. It is said to be troublesome, tedious, and hazardous; that it brings with it risk of spinal meningitis from the opening of the sacral canal; of nervous disturbance of the bladder from injury of the anterior sacral nerves; of gluteal hernia; and of paralysis of the sphincter ani from the loosening of its coccygeal attachment. These objections Abel thinks are theoretical. There is a risk of partial necrosis of the sacrum (this is avoided in Herzfeld's operation). The slow convalescence, Abel thinks, is a further disadvantage. It is slow because the movements of the patient disturb the healing of the wound. It can be made quicker by encircling the pelvis with a rigid girdle, made, for instance, of plaster-of-Paris. On the other hand, he says it has undeniable advantages. Above all, the field of operation is visible. The operator can see the extent which the disease has reached. Hæmorrhage can be stopped, because the bleeding points can be seen. If the uterus is bound to neighbouring parts by adhesions, these can be separated.

This operation is, in Abel's opinion, suited for cases in which (1) the vagina is too small and too rigid, or (2) the uterus, in consequence of adhesions, cannot be dragged down far enough, or (3) is too big for vaginal extirpation. At present its mortality is distinctly higher than that of vaginal extirpation, and therefore it cannot replace that operation in cases in which each operation is equally suitable.

3. The details of abdominal hysterectomy.

In the American Gynæcological Transactions, vol. xvii. appear papers by Polk and Baer on this subject, with discussions thereon. It appears from the papers and the remarks of different speakers that the mode of dealing with the stump after removal of the body of the uterus, which is practised by the most successful operators in England—viz., the fixation of the stump in the wound by a clamp—is losing favour in America. Its disadvantages are obvious, and those who practise it are well aware of them. Its merit is its superior safety. The results of Polk and Baer go as far as a small number of cases can to make us hope that the disadvantages of the clamp may be avoided without increase of risk.

Polk removes the whole uterus, cervix and all. After opening the belly, he ties the broad ligaments, putting the ligature, if possible, outside the ovary. With forceps or another ligature, reflux from the uterus is prevented, and then the broad ligaments are divided. The uterus is now pulled up; if unwieldy, an elastic ligature is put round it, and the part above cut away. Then a finger is thrust down between the folds of the broad ligament to discover the uterine artery. This, when identified, is lifted on an aneurysm needle and tied. This done, the uterus is cut away from the vagina, bleeding points being seized and tied as they are come to. Four long sutures are put in—one in front, one behind, one at each side, tying the vaginal wall to the peritoneum. The ends are tied in a knot and brought out through the vagina, thus turning in the peritoneal surfaces. The vagina is packed with gauze, which is removed on the third or fourth day. An abdominal drainage-tube is used if there has been much handling of the parts. Polk has operated on 18 cases in this way, with 2 deaths.

Baer does an operation which I fail to distinguish from that practised by Milton (*see* "Year-Book," 1892, p. 337), except that Baer does not take the trouble to sew the peritoneum over the stump. He ties the broad ligaments and uterine arteries, cuts off the body of the uterus and supra-vaginal part of the cervix, and lets the stump drop. He says that the traction of the stump makes the peritoneal flaps so taut that they close over it like elastic bands. He says that of course a Lembert suture may be put in if desired. Baer has thus operated on 17 cases, with one death; but this death he does not think at all brought about by the mode of treating the pedicle.

Several speakers bore witness to the great advantage of Trendelenberg's position in these operations.

4. The condition of the endometrium with fibroid tumours.

It is generally stated, mainly on the authority of Wyder, that with uterine fibroids there goes overgrowth of the endometrium, closely resembling inflammatory change, if not identical with it. Semb (*Arch. für Gyn.*, Bd. xliii. S. 200) gives the result of careful examination of the endometrium in 23 cases of uterine fibroids. His conclusion is that in most cases of myoma uteri the mucous membrane undergoes a hypertrophy, at first unaccompanied by any inflammation. It is partly a growth equally of stroma and of gland tissue, partly one in which gland tissue preponderates. In the further course of the myoma secondary changes of the endometrium often come on, caused either by the

pressure of the tumour or by inflammation, or by other complications. These may cause retrogression of the hypertrophy. Thus in submucous tumours the mucous membrane regularly undergoes atrophy from pressure. None of these changes have hæmorrhage as an invariable consequence; hypertrophy does not cause it, nor atrophy prevent it. The cause of the bleeding, in Semb's view, is the hypertrophy of the muscular wall of the uterus which accompanies fibroids.

5. Abdominal section and excision of a uterine abscess in the lying-in period.

Wm. H. Parish (*Amer. Gyn. Trans.*, vol. xvii.) relates a remarkable case. Febrile symptoms began on the fourth day after delivery. Parish was consulted in the third week, and found a swelling to the right, above, and close to the uterus. He opened the belly, and found the uterine appendages quite free from pus. The uterus presented a bi-lobed appearance, the right lobe being doughy to the feel and dark purple in colour. It was punctured, and pus escaped. The abscess cavity was found not to communicate with the uterine cavity. Parish first tied the uterine and ovarian arteries on one side, and then, by two semi-elliptical incisions extending from near the neck to the fundus uteri, he removed a wedge-shaped portion of the uterus which included the attachment of the broad ligament and the walls of the abscess. The incisions did not reach the uterine cavity. Numerous lymphatics about the abscess showed on section pus within them. Therefore successive slices were removed from the surfaces of the incised portion of the uterus until healthy tissue was reached. Bleeding was controlled by digital compression of the uterus. The lips of the wound were then brought together by sutures. The next step was the removal of the uterine appendages of the opposite side (it is not stated why). Two small abscesses, each containing about a drachm of pus, lying close to the bowel, were also excised, the peritoneal coat of the bowel being removed with each, and the surfaces brought together with silk sutures. The patient did well.

Parish urges that the indication for abdominal section after labour is the presence of encysted pus. In diffused suppurative peritonitis it does no good.

6. The local symptoms associated with backward displacement of the uterus.

There is still so much difference of opinion on this subject that I may be pardoned for quoting a paper of my own (*Obst. Trans.*, vol. xxxv.) in which I have analysed 407 cases of

backward displacement of the uterus, in order to ascertain the frequency of the different symptoms usually assigned to this displacement, and have compared the frequency of these symptoms in the displacement cases with their frequency in cases taken without other selection than the exclusion of cases with backward displacement. It is plain that if in all or in most cases backward displacement causes certain symptoms, these symptoms will preponderate in the selected group of cases with the displacement in question.

The conclusions that I have reached are the following:—*Chronic pain* of some sort is present in nine-tenths of cases of backward displacement of the uterus. The most frequent seat of pain is the *back*, usually the *sacral* region. Then come sensations of *descent*, and *ovarian* pain. Both ovarian and back pain are present on the left side three times as often as on the right. I attribute this to the fact that the left side is weaker than the right, in power of resistance to pain as well as in muscular strength. *Pain in defecation* is present in rather less than half the cases. In most cases it is due either to constipation or to morbid conditions of the rectum, but it is directly and solely due to the displacement in about one case in 9. *Painful micturition* is not present oftener in cases of backward displacement than in other patients; but *bladder irritation* is, and is produced by the displacement in about one case in five. *Leucorrhœa* does not appear to be caused by the displacement. *Dyspareunia* is present in at least one-sixth, and probably in more.

7. Menstruation in backward displacements of the uterus.

In a paper published in vol. xxxiv. of the *Obstetrical Transactions* I have, in a similar manner, investigated the frequency of disorders of menstruation in women with backward displacements, and compared them with the frequency of similar disorders in women not suffering from backward displacements. I find that in about 40 per cent. of women with retroversion or retroflexion menstruation is increased in amount; that in about three-fourths of these the increase is due to some other cause acting *with* the displacement, but that in the remainder—that is, about 10 per cent. of cases of displacement—the increase in the menstrual flow is due simply and solely to the displacement. As to *pain*, I find that about 40 per cent. of healthy women menstruate without pain; while of women with backward displacement only about 20 per cent. are free from pain. I find, further, that in about one-third of cases suffering from backward displacement the patients say that the menstrual pain has been recently either acquired or increased

in severity. I find also that the increased pain and increased flow go together. I conclude that it is not a theory, but a fact, that backward displacement of the uterus often causes menstruation to be more copious and more painful.

8. Retention of menstrual fluid from unilateral atresia.

Cullingworth (*Amer. Journal of Obst.*, 1893, p. 817) relates a case in which there was retention of menstrual fluid in the right half of a bicorned uterus and vagina. The distension of the part behind the atresia led to rupture of the septum in the cervix uteri, through which part of the retained fluid escaped, giving relief to the more urgent symptoms. But the rent being high up in the cervical canal, a considerable quantity of blood was still retained. This underwent suppuration, and the result was an offensive vaginal discharge lasting over several years. The case is interesting, not only on account of its rarity and its unusual course, but also from the diagnostic problem it presented. When seen, the offensive sanio-purulent discharge was issuing from the cervix. The sound passed to the left, the normal distance. Behind and to the right of the uterus was a fixed mass extending so low down as to obliterate the right lateral fornix. At first it was supposed that the case was one of a sloughing fibroid. But it was found that tumour and uterus did not quite move together, and therefore it was thought that a suppurating cyst outside the uterus had opened into it. Abdominal section was therefore performed, and it was found that the tumour was the enlarged right horn of a bicorned uterus. The diagnosis being thus cleared up, the cavity was freely opened by the vagina, and the septum divided. The patient went out well. Cullingworth adds to the narrative of his case a collection of similar cases reported by others.

III.—DISEASES OF THE VAGINA AND EXTERNAL GENITALS.

1. The mischiefs of pessaries.

Neugebauer (*Arch. f. Gyn.*, Bd. xliii.) has written an appalling paper, in which he has collected 242 published cases of injury from wearing pessaries. Perforation of the rectum, of the vagina, or both, of the ureter, of the urethra, of Douglas's pouch, escape into the cellular tissue or into the uterus, ulceration of the vagina, embedding in the vagina, the ulceration having healed over the pessary (I have seen this), prolonged

illness and death from peri- or para-metritis, stricture of the rectum, nymphomania, are among the effects of careless treatment with pessaries. Neugebauer's conclusion is that there is no form of pessary which may not, in certain circumstances, do mischief. Therefore none should be used unless the patient can and will remain under medical supervision. The changes which the different pessaries undergo, both in shape and in other characters, are fully described by Neugebauer.

The paper is a useful warning that the insertion of a pessary is not a trifling matter. Not only should they not be used unnecessarily, but the patient should always be fully informed as to what may possibly happen if the pessary is worn too long.

2. Uretero-vaginal fistula and its treatment.

Drucker (*Arch. f. Gyn.*, Bd. xliii.) writes a useful paper on the treatment of this rare and troublesome lesion. He has collected 38 cases, including one of his own, now published for the first time. In 24 out of the 38, the injury was due to labour. Of the remaining 14, one was caused through the removal of a pessary, one through the spontaneous perforation, and 2 in the opening of a pelvic abscess; the remaining 10 were the result of gynaecological operations—amputations of the cervix or extirpation of the uterus. The diagnosis of a ureteral fistula is made by finding that urine comes away from an opening in the vagina, but that milk injected into the bladder does not. There are four plans of treatment:—(1) To freshen and unite by sutures the borders of the fistula. The smallness of the canal concerned, and the frequency of cicatricial contractions of its lower end, make this treatment almost invariably a failure. (2) To make first an artificial vesico-vaginal fistula, and then close the vagina below this fistula, so as to make a sort of accessory bladder out of the upper part of the vagina, into which the wounded ureter may discharge. It is said that after this treatment cystitis and calculous formations occur sooner or later; but at least this result is in some cases very late; so that on the whole this is the best and only successful treatment. (3) To free the ureter, make an opening into the bladder, and stitch the ureter above the fistula into the bladder. Experience will show how far this is practicable. (4) To remove the kidney the ureter of which has been damaged. This is only justifiable when we are quite certain which ureter it is that leaks (and this, when the parts are matted together by old adhesions, is not always easy to determine), and quite certain also that the other kidney is healthy.

IV.—DISEASES AFFECTING THE GENERATIVE ORGANS AS A WHOLE.

1. Tuberculosis of the female genitals.

J. Whitridge Williams (*Amer. Gyn. Trans.*, vol. xvii.) has written an exhaustive monograph on Tuberculosis of the Female Generative Organs, and appended to it a full bibliography.

Tuberculosis of the *vulva* is rare. Williams thinks that some cases have probably been described under the title of "esthiomène." He has only found three undoubted cases on record, all of which occurred in phthisical patients. In each case the vagina and vulva were the only parts of the genital tract involved. The disease here is seen as large shallow ulcers, with irregular, sharply cut, more or less granular margins. When cleansed, the surface of the ulcer is seen to be studded with granulations, some greyish and translucent, others yellow.

Tuberculosis of the *vagina* is commoner than tuberculosis of the vulva, and is generally secondary to tuberculosis higher up. It occurs here in the form either of miliary tubercles, or ulcers arising from the caseation and breaking down of such tubercles. The ulceration presents a serpiginous appearance, with sharply cut, perpendicular margins, a shallow base studded with granulations, and covered with caseous material; and around is an areola of redness in which miliary tubercles may be found. These ulcers may perforate, and thus lead to vesico-vaginal or recto-vaginal fistulæ. The upper third of the posterior wall is the usual site. The explanation which Williams gives of this is that the disease in the vagina is produced by the trickling down on to the posterior wall of the secretions from the tubercular uterus. It may be secondary to tuberculosis elsewhere than in the uterus.

Tuberculosis of the *uterus* is not at all rare. It is nearly always secondary to tuberculosis somewhere else. It attacks the endometrium, and occurs in three forms: (1) miliary tuberculosis; (2) chronic diffuse tuberculosis, or caseous endometritis; and (3) chronic fibroid tuberculosis. The first form, miliary tuberculosis, is without clinical importance, for it is simply a part of acute general tuberculosis. The second form, chronic diffuse tuberculosis, is the common one. Possibly it begins as miliary tuberculosis; but, as we see it, the uterine cavity is filled with caseous stuff, and when this is scraped off, the surface beneath is jagged and irregular, and stuffed with tubercles. The disease stops short at the internal os, the cervix being healthy. The ulceration begins on the surface, and as the disease extends, miliary tubercles grow deeper down, while the surface caseates. The third variety, chronic fibroid

tuberculosis, has not yet been seen in the uterus; but as it occurs in the tubes, it is supposed that it may occur in the uterus also. The caseous stuff in the uterus may stop up the cervical canal, and then the uterus gets distended, and pyometra is the result.

Tuberculosis of the *cervix* is very rare. It may occur either as miliary tubercles or ulceration, or both, and either with or without tubercle elsewhere. Though rare, it is important, because tubercular ulceration of the cervix may be mistaken for cancer.

Tuberculosis of the *Fallopian tubes* is the most common kind of genital tuberculosis. In the vast majority of cases it is associated with tuberculosis elsewhere, and in many the peritoneum is also involved. Although generally secondary to tubercle elsewhere, yet the disease in the Fallopian tube is usually primary so far as the genital tract is concerned. It is the primary disease, however, much oftener than has ever been suspected, and the demonstration of this fact is one of the most important points in Williams's paper. The usual form of tubal tuberculosis is well known. The tube is dilated and filled with caseous material of some form—either fluid, cheesy, or calcified—and its mucosa is ulcerated and studded with tubercles. A tubal sac of tubercular pus may be so large as to reach to the umbilicus. All gradations are seen between tubes full of caseous stuff and tubes healthy except for a few miliary tubercles scattered in the mucosa.

There is a special form of tubal tuberculosis to which Williams directs attention, in which the signs of tuberculosis are so slight or so disguised that the tubercular nature of the disease is not recognised until the diseased part has been examined microscopically.

There are three forms of tubercular salpingitis which correspond to the three forms described as occurring in the uterus. They are:—(1) Miliary tuberculosis; (2) chronic diffuse tuberculosis; (3) chronic fibroid tuberculosis. The last-named is characterised by an excessive formation of fibrous tissue in and between the tubercles, and by its chronicity. Williams believes the description he here gives of it to be the first. He thinks it may possibly be a conservative process, indicating a mode of healing.

Tuberculosis of the *ovary* is not so common as that of the tubes and uterus. All the cases observed as yet have been secondary to tuberculosis elsewhere, not primary. It may affect the surface only, or invade the entire organ. It occurs in the forms of miliary tubercle, caseous masses, or tubercular abscesses. Tubercle may also invade ovarian cystomata.

Tuberculosis of the *placenta* has been described, but the accuracy of the description is doubtful. But a few undoubted cases of inherited tuberculosis have been put on record, and this renders the question of tuberculosis of the placenta an important one.

Williams, as has been stated above, thinks that genital tuberculosis is far commoner than is supposed. In 444 abdominal sections (or "coeliotomies," as our American brethren have lately taken to calling them) by different operators, tubercular disease was found in 15, or about $3\frac{1}{2}$ per cent. Out of 137 observed by Williams, the disease in 2 was evidently tubercular; but in 5 others, in which tubercular disease was not suspected from the macroscopical appearances, microscopical examinations revealed tubercle bacilli, making 7, or 5.2 per cent. But in 46 of the 137 cases the ovaries and tubes were perfectly normal. Taking the 91 in which the uterine appendages were removed for inflammation, we have tuberculosis present in 7, or 7.7 per cent. Now, as only 2, or 30 per cent., were recognised at the time of operation, while 5, or 70 per cent., were only found out in consequence of routine microscopical examination, it follows that the statements of operators who do not examine microscopically all diseased parts removed probably only represent about one-fourth of the cases that occur, and that three-fourths of the cases escape recognition.

Williams attributes the disease to infection of the parts with tubercle bacilli, either through the blood, through the peritoneum from the bowel or bladder; by fingers, instruments, or linen; and, lastly, by coitus. Williams considers at length the possibility of the latter mode of infection; he concludes that it does occur, though its occurrence has not yet been scientifically proved.

The *diagnosis* can only be made with the microscope, by the examination for tubercle bacilli of bits of tissue removed by the curette. The disease occurs at all ages, but most frequently during the period of greatest sexual activity, twenty to forty. It is very chronic, and *if local*, amenable to treatment. In tuberculosis of the vulva, vagina, and uterus, the discharge attracts attention and leads to the discovery of ulceration. The disease is likely to be taken for cancer unless microscopical examination be made, more especially as when tubercle attacks the uterus it leads to some hypertrophy of that organ. In any intractable case of endometritis curetted portions ought to be examined for tubercle bacilli.

Primary tuberculosis of the tubes produces at first no symptoms at all. If the tube becomes inflamed, closed, and adherent, then the symptoms are like those of salpingo-oöphoritis from other causes; there is nothing in the symptoms or physical signs to

indicate that the disease is tubercular. It is an error to say that tubercular disease of the tubes causes amenorrhœa. Amenorrhœa is present in most cases, but it is due to the accompanying phthisis. When phthisis is not present, menstruation is not suppressed, and there may be hæmorrhage.

Primary tuberculosis of the genitals may lead to secondary infection of other organs, or to peritonitis, and thus kill the patient.

Tubercular disease of the cervix, vagina, or vulva may be taken for a syphilitic change. But the effect of treatment ought soon to clear up this doubt.

The *prognosis* is always grave.

The prophylactic *treatment* consists, in the first place, of extreme cleanliness. Persons suffering from genital tuberculosis ought to be warned to abstain from coitus. Tubercular ulcers of the vagina and vulva can be made to disappear by the application of tincture of iodine, but they often recur. Iodoform or lactic acid may be used. Ulceration which resists this treatment should be excised and the edges of the incision brought together with sutures. If tubercular ulceration of the cervix be recognised and fail to respond to conservative treatment, the cervix should be amputated. In tubercular endometritis the treatment is to curette the uterus and then put in an iodoform suppository. If this fail, the uterus should be removed by the vagina, and the tubes and ovaries should be taken away with it. Primary tuberculosis of the tubes is so impossible to diagnose that the question of operation for it never comes up for discussion; but could the disease be diagnosed, there could be no hesitation as to the propriety of removing the tubes. If the process is secondary and the lungs are diseased, the question is difficult. With advanced lung disease there should be no thought of operating; but if the lung disease is in so early a stage that there is a possibility of its recovering, the operation should be done, with a view of preventing the complications that might arise from the disease of the genitals. In tubercular peritonitis with disease of the tubes and ovaries, the uterine appendages should be removed, for abdominal section has a curative influence on tubercle of the peritoneum. If tubes, ovaries, and uterus be involved, Williams thinks it doubtful whether many operators will perform supra-vaginal amputation of the uterus with its appendages, or will prefer to remove the appendages and treat the uterus by curetting and iodoform. Of course the recognised general treatment—cod-liver oil, etc.—for tuberculosis should be employed.

The results of operations in this class of cases are encouraging

enough to warrant operators in advocating their operative treatment. In a number of cases the patients have been perfectly well four or five years after the operation. Williams's own experience, though too recent to warrant a general conclusion, yet goes to show that good is done by operating.

2. Affections of the female genitals in mumps.

The *Progrès Médicale*, Feb. 18, 1893, contains extracts from a forthcoming work on Mumps, by J. Comby, which calls for notice here on account of the part relating to mumps and the female genitals. It is sometimes stated that as mumps in the male is often associated with a metastatic inflammation of the testicle, so in the female it may be associated with metastatic inflammation of the ovary. Trousseau has expressed his astonishment that no one should have noticed this. A statement of this kind, however, ought not to be accepted merely on account of its *à priori* probability; it should be supported by facts. Comby has searched the literature of the subject for recorded observations of ovaritis coming on in the course of mumps. He has only found five at all bearing on it. Four of these are of patients who in the course of mumps complained of pain in the situation of one or both ovaries, while in two of them a rounded swelling was felt in the situation of an ovary. In one of these, when the swelling went away the parotitis reappeared; in the other, it is only said that the patient got well. The remaining case is that of a woman in whom, when she ought to have menstruated, instead of hæmorrhage there was sometimes swelling of the parotids, sometimes thrombus of the labia. Comby's conclusion is that observations of ovaritis from mumps are rare, while those of orchitis are innumerable. He adds that, if the existence of ovaritis from mumps is doubtful, much more is there doubt about the consequences of such ovaritis, the atrophy and the sterility which might follow it.

Comby has also found four observations of *swelling of the labia majora* in the course of mumps, one of them ending in suppuration. This, he thinks, must be merely a case of coincidence.

Swelling, pain and tenderness of *the breasts* during mumps, although very rare, yet seem much commoner than any affection of the ovary or the labia. Comby quotes numerous observations of this occurrence.

V.—FUNCTIONAL DISEASES.

1. Periodical intermenstrual pain.

Chauncey D. Palmer (*Amer. Gyn. Trans.*, vol. xvii., p. 47) relates

3 cases of this disease—the condition described by Priestley under the name of “intermediate dysmenorrhœa.” Palmer regards the pain as ovarian, and urges the following reasons for thinking so: The position of the pain, which is that of the ovary. The regularity of the recurrence of the pain, from which it is inferred that it depends upon the changes associated with ovulation. The absence of any kind of uterine disease in some cases; and in the rest, the absence of any uniformity of the uterine disease. The fact that monthly changes do take place in the ovary. Lastly, the fact that morbid changes have been found present in the ovaries. The latter proposition is not supported by any evidence of changes peculiar to this disease; it is only a general one. Palmer starts from the fact that oöphoritis and peri-oöphoritis are common, and infers that periodic intermenstrual pain probably depends upon one of these morbid changes. In treatment, he recommends cannabis indica, mercury, potassium iodide, chloride of gold and sodium, applications of ichthyolated boroglyceride, counter-irritation, and, as a *dernier ressort*, oöphorectomy.

In the discussion, W. T. Howard, of Baltimore, Reeves Jackson, of Chicago, and others, mentioned some cases in which patients had had their ovaries removed, for ovarian pain, without the slightest benefit.

2. Physiological non-inflammatory uterine troubles.

Under the above title, Doléris (*Nouvelles Archives d'Obst. et de Gyn.*, 1893) publishes a series of papers on a class of cases which have lately received but scant attention from writers on gynæcological subjects, apparently having been thrown into the shade by the diseases which abdominal surgery has taught us to recognise and cure.

Taking a broad view of the inflammatory diseases of the uterus, Doléris divides them, according to their etiology, into three groups—those of *puerperal*, *gonorrhæal*, and *banal* origin. He does not exactly define what he means by “banal.” I suppose the real equivalent is inflammation the origin of which is obscure. Leaving these, Doléris points out that there is such a thing as congestion of the uterus; it takes place normally every month; but congestion is not inflammation. It may be a symptom, a transitory trouble; it may be the initial stage of true metritis; it may be that congestion makes the uterus an easier prey to infection.

There are certain cases in which the uterus is unhealthy, but inflammation is certainly not present. These are the subject of Doléris's papers. He calls them “false metritis” (a term which does not seem to me a happy one). The first kind is “uterine

engorgement," "softening of the uterus," or "uterine debility." Engorgement is the result of hindered return of blood from the uterus—*i.e.*, of passive venous congestion. It is exactly realised in some cases of retroversion of the uterus, and in certain cases of varicose dilatation of the pelvic veins. (Dolérís refers to no evidence in favour of the latter statement. I know of none.) True *primitive* engorgement, he says, is almost always of constitutional origin. It springs from a defective or exhausted organism. We sometimes find it typically realised in certain young girls. The same thing happens in the uterus, especially in the cervix, as happens in other mucous membranes; the swelling of the uterus is the equivalent of the thickness of the lips, the conjunctivæ, the alæ nasi, and the fingers and toes in strumous children. In such cases we get leucorrhœa and profuse metrorrhagia following a period of amenorrhœa. Genuine metritis is excessively rare in young girls. It may be produced by infection, and, when so produced, the fact that the patient is a virgin imprints no special character upon it. The condition of "uterine engorgement" was very thoroughly described by the older French writers, for they supposed it to be the beginning of metritis. The treatment of it consists in the curing of anæmia, of constipation; the avoidance of everything likely to produce disturbance in the pelvic circulation, such as prolonged sitting, the use of the sewing machine, and in cleanliness of the genital organs—baths, douches, etc.

The second kind Dolérís specifies is *subinvolution*. The importance of this condition is so fully recognised in English text-books that I need not quote Dolérís very fully about it. Among other well-known causes Dolérís puts varicose veins; but he admits that the demonstration of this is not easy. The proof of it to him is the frequency with which, in the course of plastic operations, he has found great venous dilatation. Excessively frequent child-bearing is, to his mind, one of the great causes of subinvolution. In treatment, he quotes various authors in favour of hydrastin, the hot douche, faradisation, and galvanism, but gives no observations of his own.

The next "physiological trouble" of which Dolérís speaks is the vaso-motor disturbance which often accompanies *the menopause*. The uterus is a transitory organ, like the thymus, and atrophy with sclerosis is its natural end. This process is sometimes accompanied with physiological troubles, which some have called metritis of the menopause. During this period of change the uterus is soft, bleeds easily, and displacements are apt to occur; there is often leucorrhœa. There is, in fact, a period of

congestion preceding sclerosis. With this go vascular troubles in distant parts, heaviness of head, flushing of face, vertigo, palpitation, breathlessness, even hæmoptysis. There is, however, no metritis nor endometritis peculiar to the menopause, although a woman at this time of life may become the subject of inflammatory disease. The changes above described are not attended with fever, and do not tend to spread to the appendages. Lastly, they need general, not local, treatment. Baths, general hygiene, the open air, simple diet, iodide of potassium, on account of its power in favouring tissue change, seem to Doléris the best therapeutical measures for such cases.

Fourthly, Doléris treats of *membranous dysmenorrhœa*. He gives a very full and clear account of the different theoretical explanations that have been given of this disease. I need not summarise what he quotes from other authors, but will give only his own experience. He recommends above everything the employment in large doses, and for a long time, of iodide of potassium, which for him is here the heroic remedy. "Its action on general nutrition, the activity it impresses on tissue change, make it the best means of combatting the genital manifestations of arthritism."

Lastly, Doléris describes the changes in the uterus which accompany *new growths*. As these are quite secondary in importance to the growths themselves, I need not further refer to them.

MIDWIFERY.

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I.—THE PHYSIOLOGY OF PREGNANCY.

THE first paper under this heading is of importance as bearing on the management of the third stage of labour. The conclusions of the author bear out the teaching of the English school of obstetrics—viz., that it is best not to hurry the expulsion of the placenta for two reasons—(1) That delay gives time for uterine pains, which usually slacken after the expulsion of the child, to resume their force and assist in the detachment of the placenta; and (2) because by delaying the ligature of the cord until the uterus has closed down on and forced out the afterbirth the foetus is saved a great loss of blood. It is well known how badly infants bear the loss of blood, and clearly the natural mechanism which gives the child the advantage of the extra blood contained in the placental circulation is one to be copied by the obstetrician. The only exception occurs in the case of delivery during the middle months of utero-gestation, and here the tendency of the cervix to close after the birth of the child and imprison the placenta makes an early expulsion of the secundines desirable.

Caviglia (*Nouv. Arch. d'Obstét. et de Gynéc.*, Dec., 1892, Jan. and Feb., 1893) has come to the following conclusions after careful observation:—(1) Blood passes from the placenta to the child in process of birth through uterine pressure, retraction, and sometimes contraction. (2) The constant positive pressure of the foetal vena cava superior constitutes a resistance opposed to the passage of placental blood by the foetal organism; but this resistance, being inferior to the force which acts on the placenta, is not sufficient to prevent the afflux of blood. (3) Respiration takes away cardiac force and blood from the systemic circulation, hence it diminishes venous pressure and the special resistance defined in (2). In this sense alone respiration facilitates the afflux of blood to the child. (4) The afflux exists in cyanotic asphyxia, but to a small extent owing to the high pressure in the venous system of the child. (5) The arrest of the foetal-placental circulation does not depend on the diminution of pressure in the foetal arterial

system, but on the occlusion of the placental capillaries by uterine pressure. When the placenta is expelled early, the pulsations may continue almost indefinitely. (6) The passage of blood from the placenta to the new-born child often continues after the umbilical arteries have ceased to pulsate. (7) During the first moments after birth the child's weight diminishes sometimes on account of relaxation of the uterus. Consequently too early ligature involves the risk of removing from the child's circulation not only all the reserve blood, but also some of the blood necessary for the child at any given moment. The last two conclusions are of importance in practical obstetrics.

The two following communications deal with conditions of the urine in the gravid and puerperal woman. The first is of special interest in connection with the production of puerperal eclampsia, and certainly serves to emphasise the connection of albuminuria with increase of vascular tension.

Aufrecht (*Centralbl. f. klin. Med.*, June 3, 1893) records some investigations in which the urine was examined before and after labour, all possible sources of contamination being avoided. Of 32 cases, none had albumen before labour or just after the commencement of the pains, but in 18 albumen varying in quantity from 1 or 2 to $\frac{1}{4}$ pro mille was found after labour. In all these cases the albumen disappeared in twenty-four hours. Epithelium, but no casts, was present. It is concluded that labour, or rather the pains, causes the albuminuria by producing some stagnation in the venous system, including the renal veins. Thus the urine should be examined before labour, and if albumen is present the case should be watched, as an increase is likely to occur during the labour. If eclampsia appears at the beginning of or during the pains, the labour should be hurried on as much as possible, as, according to the author's experience, renal disease with albuminuria is without exception the cause of the eclampsia. The function of the kidneys is further compromised by long-lasting pains, and the danger to the mother increased. Where artificial delivery cannot yet be effected, chloral is most suitable. Again, albuminuria and cylindruria are separate processes, the latter having nothing to do with the transudation of albumen through the renal vessels. Casts are the product of inflammatory irritation of the renal epithelium.

McCann and **Aldren Turner** (*Lond. Obstet. Soc. Trans.*, vol. xxxiv., 1892) have carried out a series of investigations regarding the occurrence of sugar in the urine during the puerperal state, and have arrived at the following conclusions:—
(1) That sugar is present in the urine of women during lactation.

(The authors assume with Hofmeister that this sugar is milk-sugar.) Glucose may also be found. (2) That sugar is present at some period in every case. (3) That in the majority of cases the largest amount occurs on the fourth and fifth days of the puerperium. (4) That the quantity depends on (a) the condition of the breasts; (b) the quantity and quality of the milk; (c) the sucking of the child. Out of 100 cases the average quantity found was 35 per cent.—i.e., $1\frac{1}{2}$ grain per ounce. (5) That when lactation is diminished or suppressed the amount of sugar diminishes or disappears. (6) That when the production and exhaustion of the milk are equal, the amount of sugar is very small.

Giles (*Lond. Obstet. Soc. Trans.*, 1893) read a paper on the Lochia, giving the result of investigations on the quantity of them after labour. The conclusions derived from observations on 60 cases are as follow:—(1) The average normal quantity of lochia is about $10\frac{1}{2}$ oz. (2) The duration of the discharge is on the average nine or ten days. (3) The degree of parity does not influence the quantity. (4) Non-suckling does not increase the discharge. (5) The quantity is generally greater in women up to the age of twenty-five. (6) The weight of the child has a slight, and that of the placenta a well-marked influence, the quantity increasing with the weight of the placenta. (7) The quantity increases with the amount of hæmorrhage at the time of labour. (8) The lochia are more abundant in the case of those who habitually menstruate profusely. (9) The quantity is generally great in the case of women of dark complexion. The difference between Gassner's results—viz., $52\frac{1}{4}$ oz.—and his own—viz., $10\frac{1}{2}$ oz.—is attributed mainly to the use of antiseptics and partly to the effect of astringent douching. The factors that influence the quantity of lochia were discussed. Giles believed that the three discharges—during menstruation, during labour, and during puerperium—varied simultaneously, the quantity depending on predisposing conditions, of which the amount of pigmentation was generally an index, and that all three discharges were habitually more profuse in dark women. In the discussion that followed, the President (Herman) said that Giles's paper would enrich the Transactions by a contribution of permanent value, for it was a record of facts. Certain sources of error had been mentioned (which Giles had discussed in his paper). He did not think they could account for the difference between Giles's results and those of Gassner, for they must also have attended Gassner's research, and it would be interesting to know in which way Gassner had guarded against them. He thought the lochia came partly

from the uterus, partly from the vagina. The vagina had to undergo involution as well as the uterus; it was greatly stretched and compressed during delivery, and such injury to a mucous canal would make it liable to inflammation. He did not agree with those who had said that puerperia in which douches were used were not natural. The douches, by destroying morbid germs which produced disease, kept the lying-in "natural." It seemed to him that the variation dependent on the size of the child was about the same as that dependent on the size of the placenta, and not much less than it, as Giles had put it.

II.—THE PATHOLOGY OF PREGNANCY.

Wheaton (*Lancet*, Jan., 1893) records a case of tetany as a sequela of puerperal eclampsia. The facts are as following:—Mrs. M——, aged twenty, primipara, was confined at 10.45 a.m. on March 2nd, 1890. The labour was not unduly prolonged, the presentation was of the vertex, the child (a male) was living, and there was no undue loss of blood. Before labour the patient was noticed to be pale and complained of pain in the loins; but, as there was no œdema anywhere, the urine was not examined. Immediately after the expulsion of the placenta at 11 a.m. she was seized with convulsions, which continued at intervals till March 3rd, at 4 a.m. Consciousness, which had been lost, had not returned on March 5th, when in the morning she was noticed by the nurse to have spasmodic attacks of rigidity of the limbs. When seen two hours later she was lying on her back with the arms rigidly extended by her sides, the hands semiflexed at the wrist, the proximal joints of the fingers of both hands flexed and the two distal joints extended; the fingers were approximated and adducted as a whole, and the thumbs were rigidly flexed into the palms. The legs were rigidly straightened out, the ankle-joints were extended, and the toes were adducted. The jaws were rigid, but not so much as to prevent the giving of food. Pressure on the limbs caused increased rigidity. This condition, which was thus typical of tetany, lasted for three days, at the end of which time it gradually disappeared, consciousness also returning slowly. The temperature, which had continued at 102° to 103°, became normal, and the urine increased in quantity to 52 ounces. There was complete loss of memory regarding the events preceding the fits, and for some hours the patient would not believe she had been confined. Secretion of milk was entirely absent, but the involution of the uterus proceeded normally. In three weeks convalescence was complete; there was only a trace of albumen in the

urine, and the cardiac murmurs had disappeared. Six months later the urine contained a trace of albumen. He (Wheaton) has seen her twice since, the last time three months ago, and on each occasion albumen has been absent from the urine, and there were no signs of increased arterial tension. She has not become pregnant again. Tetany always occurs after some cause producing exhaustion or defective nutrition of the nervous system. Especially is this the case in the easily exhausted nervous system of children, in whom tetany is so common as the so-called "carpo-pedal contractions." These contractions may follow convulsions, diarrhœa, teething, or any exhausting cause. In adults tetany principally occurs in women, especially from the exhaustion of lactation or pregnancy under unhealthy surroundings; and also in connection with hysteria, as in a case reported by **Caiger** (*Lancet*, Aug. 20, 1887). Tetany may be regarded as the result of profound exhaustion or malnutrition of the higher motor centres of the cerebral cortex, in consequence of which the restraining influence is withdrawn from a lower stratum of cells, which are thus allowed to come into action without any regulation from higher centres. The normal action of this lower stratum of cells is to initiate movements corresponding to the typical attitudes of this disease; consequently, when the higher control is withdrawn, their uncontrolled action produces permanent contractures. In the case in point the exhaustion of the higher centres was due to the repeated convulsions, and its intensity was marked by the long period of unconsciousness and absence of voluntary movement; also by the persistent high temperature, which latter is also probably due to the unregulated action of lower heat-producing centres owing to the exhaustion of higher controlling ones. That no organic lesions exist in tetany is proved by the fact that it may recur in the same subject again and again at intervals. The cardiac murmurs were undoubtedly due to anæmia, although at the same time they gave rise to a suspicion of ulcerative endocarditis. This is frequently seen as the result of septicæmia after delivery, to which cases of eclampsia are particularly exposed owing to the failure of antisepsis in patients with convulsions and suffering from involuntary evacuations. Another point of interest is the increase in the amount of urine and urea which followed measures for the relief of kidney congestion. No treatment was ordered for the tetany except quinine and iron; it is essentially a symptom of deficient action of the nervous centres, and requires a tonic treatment. **Dakin** has collected 8 cases of tetany during pregnancy (*Obstet. Soc. Transactions*, vol. xxxii., p. 163); they all occurred before delivery—not after, as in the present case—and one ended fatally.

Charpentier (*Bull. de l'Acad. de Méd.*, vol. xxix., No. 5, Jan. 31, 1893) sums up the rational prophylaxis and treatment of puerperal eclampsia. As any pregnant woman with albuminuria is liable to have convulsions, and as a milk diet is especially good in albuminuria, and above all in the albuminuria of pregnancy, the urine of all pregnant women should be examined, and the strictest milk diet must be enforced whenever even a trace of albumen is found. Whenever a case of eclampsia occurs, if the patient be vigorous and very livid, 400 to 500 grammes of blood must be drawn off, then chloral is to be administered. The patient should take milk as soon as possible afterwards. Should she be delicate, or the fits mild, chloral without venesection will suffice. Labour should be allowed to end spontaneously whenever possible. If not possible, on account of uterine atony, the forceps or version will be necessary should the child be alive; cephalotripsy or some allied operation if it be dead. These operations should not be commenced till the os has become well dilated. Induced premature labour is only justifiable in exceptional cases where medical treatment has failed entirely. Cæsarean section and forced labour, especially when forced by deep incisions of the cervix, are absolutely unjustifiable. In the discussion **Tarnier** extolled the milk treatment. It was never too late to begin it. He tried it on a pregnant woman who had albuminuria and was almost blind from retinitis. The sight was at once regained, and the patient recovered without any eclampsia occurring. Headaches and epigastric pains, as well as albuminuria, were prodromata of eclampsia, and therefore demanded milk diet.

[Lately the benefit of a strict milk diet in the treatment of albuminuria has been called into question, and it has been suggested that the restriction is not only unnecessary, but at times positively harmful. Whatever may be the benefit derived by a more free diet in some cases in which albuminuria is a prominent symptom, there can be no question that pregnant women in whom albumen appears copiously in the urine, and in whom the prodromata of eclampsia are present, do improve rapidly on a milk diet, and do relapse, often to a considerable degree, when the scale of feeding is advanced.]

Puech (*Nouv. Montpellier Méd.*, No. 31, 1892) attended a primipara, aged twenty-three, who was admitted into hospital for severe eclampsia during the sixth month of pregnancy. There seemed no tendency to delivery. She was at once placed under chloroform for three hours, but every time the administration was slackened convulsive movements began. Afterwards a severe convulsion set in, followed by coma. As insensibility became profound, free venesection from the arm was practised; at once the patient's

condition improved, respiration became less embarrassed, and the temperature fell from 103.6° to 101° F. an hour after the bleeding. Chloral was given and the patient steadily improved. Albumen, which at first abounded in the urine, at length almost disappeared, the patient completely regained her senses, and the foetal heart-sounds were found to be still audible. When the report was published, there seemed every chance that the patient would continue her pregnancy to term.

Cotterell (*Lancet*, Oct., 1892) records a case of double ovariectomy performed during pregnancy. M. P—, aged thirty-seven, multipara, a poor half-starved woman, consulted him about the beginning of March, 1890. She stated that she was three months pregnant, but that her abdomen was larger than it was usually at full term. She also complained of very great abdominal pain. Physical examination revealed an abdominal tumour, probably ovarian, which appeared larger on the left side, but which extended well on to the right side. There was evidence of a small amount of fluid in the peritoneal cavity, together with an enlargement of the uterus, this latter being probably due to pregnancy. An operation was advised, which after some delay was agreed upon. On April 5th, 1890, he opened the abdomen and removed a large multilocular ovarian cyst connected with the left ovary. There was some difficulty in doing this owing to a large number of old and recent adhesions. It was then discovered that there was another large multilocular cyst, also very adherent to the surrounding parts, growing from the right ovary. This was removed. The uterus was found enlarged. The operation was performed antiseptically, the spray not being used. A Keith's drainage-tube was inserted. The patient suffered severely from shock for about three hours, after which she rallied remarkably, considering her weak state before the operation. Forty-two hours after the operation the patient aborted a four months' foetus, after which she quickly became moribund, and died in about three hours. A post-mortem examination showed no evidence of peritonitis.

Stratz (*Zeitschrift für Geburt.*, Bd. v., 1880) gives a similar case where operation was performed in the third month of pregnancy, and recovery ensued. Similar cases may also be found in Bland Sutton's "Surgical Diseases of the Ovaries and Fallopian Tubes."

Polaiillon (*Archives de Tocol. et de Gynéc.*, Oct., 1892) reports this case. The patient first noticed an abdominal swelling when twenty-three years old. For six years it increased slowly, and gave little or no trouble. In the autumn of 1891 much discomfort

was experienced, which interfered with the patient's work as a laundress. On December 28th she was attacked with violent abdominal pain. On admission into a hospital a cystic ovary was detected, with pregnancy. The patient was in a very bad general condition. She was emaciated, feverish, and in great pain. Immediate operation was indicated, and performed on January 12th, 1892. The tumour was on the left side, with strong vascular adhesions to the omentum, intestines, and right Fallopian tube. The right ovary was cystic and as large as a hen's egg. Both cysts and appendages were removed. The uterus was scrupulously left alone. On June 29th the patient was naturally delivered of a healthy, well-formed female child. The placenta was normal. The cicatrix of the ovariectomy had not yielded in any respect; it was deeply pigmented. The patient had an abundant supply of milk, and nursed her child satisfactorily. The catamenia, according to the patient, had been absent five months when she was admitted into hospital; but it is evident from the after-history that she was about three and a half months pregnant when the operation was performed.

At the meeting of the British Medical Association, **Aust Lawrence** did good service by calling attention to the risks of allowing pregnant women with cystic ovarian disease to go to full term. In his opinion it was wise in every case to operate as soon as the diagnosis was assured, and so deliver the patient from the great risks she ran if delivery was complicated by the presence of large abdominal tumours. The presence of pregnancy does not seem to greatly increase the risks of ovariectomy. Abortion may be rendered less probable by ligaturing the pedicle as far from the uterus as possible. Apart from the risks of dystocia, with bruising or rupture of the cyst wall, if delivery takes place at full term, there is the fact that ovarian tumours have a tendency to grow very rapidly on the completion of pregnancy.

Sippel (*Centralbl. f. Gyn.*, No. 3, 1893) performed double ovariectomy on May 30th, 1890. The patient was thirty years old, and had borne a child over five years previously; she was very anxious for another. The right ovary was converted into a tumour of the size of a child's head; not a trace of normal ovarian tissue remained. It was removed with its tube. The left ovary was of the size of a goose's egg. Along its hilum was a long tract of normal tissue. A large clamp was applied above this tract to check hæmorrhage. The diseased part of the ovary was cut away. The raw surface of the healthy part left behind was united by means of catgut threads, and some bleeding vessels were tied separately. This healthy part was an inch and a half long, and

about one-eighth of an inch thick. The tube was left entire. The catamenia returned after the operation. They ceased after August 22nd, 1891. On April 7th, 1892, Sippel saw the patient once more. Pregnancy was progressing favourably. Soon after the visit she was safely delivered of a living child.

Fournier (*Gazette des Hôpitaux*, Jan. 12, 1893) believes that two of the most important factors in the diagnosis of hereditary syphilis in a family are great frequency of abortion and high infantile mortality. Abortion is least frequent when the father alone is syphilitic, more frequent when the mother alone is syphilitic, and most constant when both parents are infected. In the latter cases as many as nineteen abortions have been known to occur. Fournier attended a family in which the first three children were all born at term and all robust. The father contracted syphilis, and his wife became infected; she aborted three times in succession. Fournier found that at the Lourcine Hospital 145 out of 167 of the children born of syphilitic mothers died in the institution. Collecting trustworthy statistics of 441 cases reported elsewhere, 100 children whose mothers were syphilitic survived infancy, while 341 died. It is noteworthy that out of the 341 that died, 335 perished within their first year; only 6 died later. Out of 9 children in a syphilitic family, only 2 are likely to survive the first year.

Gottschalk (*Wiener medicin. Wochenschr.*, No. 3, 1893) observed that "deciduoma malignum" has been accurately recorded in seven clinical reports. In no form of malignant disease in the uterus or elsewhere do metastases appear so early. Death ensues within nine months. Gottschalk's patient was forty-three years old; she had borne two children to term, and had aborted three times, the last occasion being in 1891; then the uterine cavity was scraped. In December, 1891, she became pregnant again. A sudden attack of severe flooding occurred in the following February. The uterus was large, retroflexed, doughy, and quite movable. Plugging did not check the hæmorrhage. The curette was used and shreds of decidua removed. Flooding recurred, and the scraping had to be repeated. In July, 1892, Gottschalk found the patient very anæmic. A spongy mass occupied the site of the placenta, and filled the uterine cavity near the fundus; new growths had extended into the substance of the walls. Under the microscope true sarcoma of the placenta was detected. The uterine glands were involved. On August 16th vaginal hysterectomy was performed. On the previous day there had been signs of septicæmia from absorption of *débris* in the uterine walls. The patient recovered and was in good health in November.

Gottschalk dwells on the importance of examining scrapings from the uterus; for, should the malignant disease of the decidua set in, the sole chance of life for the patient lies in prompt operation after early diagnosis.

III. —EXTRA-UTERINE GESTATION.

It is satisfactory to note, year by year, what steady advance is being made in our knowledge of the pathology and life history of conceptions which take place outside the uterine cavity. The following papers will give some idea of the work that has been done in this direction during the past year. That by Bland Sutton, founded as it is on the most exact and careful pathological research, does much to advance our knowledge of the morbid changes which may take place in an ovum growing in the Fallopian tube, and to give us a clear understanding of the mode and position of the hæmorrhages that are poured out into the peritoneal cavity. The analogy of the extra-uterine mole to the same formation in the cavity of the uterus renders the subject more explicit and easy of comprehension. It may be premature to consider all blood collections in the Fallopian tubes as due to ectopic gestation, but we are being brought year by year nearer to the point where probability merges into certainty.

Bland Sutton (*Med. Soc. Trans.*, vol. xvi.), writing on Tubal Moles and Tubal Abortions, says: Tubal moles differ from uterine moles in several particulars; indeed, the points of distinction are such as to enable us readily to tell one from the other. The uterine mole is more or less spherical; the amniotic cavity is of fair size, and occupies the centre of the mole. The embryo may or may not be present. Sometimes it is represented merely by an ill-shaped mass pendulous at the end of the cord. Even when the embryo can be recognised, it is very misshapen, and the umbilical cord is often œdematous. (Fig. 1.) A tubal mole in its early stage is spherical, but, after attaining the dimensions of a walnut, becomes ovoid. (Fig. 2.) In the majority of cases the amniotic cavity occupies an excentric position; in consequence of this peculiarity the thin amnion is easily ruptured, and permits the escape of the embryo. This explains the difficulty of finding the embryo in many cases where the mole has been discharged through a rent in the wall of the tube or aborted through an unclosed ostium, accompanied, as the rule is in these cases, with free hæmorrhage. The mole is easily found in the clot; but if the embryo has escaped from the amniotic cavity the chances are that it will not be recognised. As is the case with uterine moles, the embryo sometimes

dies very early, and the amniotic sac contains nothing but a small quantity of fluid. When the mole, on its escape from the tube, is discharged between the layers of the broad ligament, it becomes so compressed that the embryo is found flattened out like a succulent flower firmly squeezed between the leaves of a heavy book. In hard, firm clots in which the amniotic cavity is not recognisable, sections from the supposed mole must be prepared and examined with a microscope for chorionic villi. The presence of chorionic villi



FIG. 1.—A Uterine Mole.

is as indicative of a mole as the presence of an embryo. These villi are such characteristic structures that they cannot be confounded with "half-organised blood-clot," as some writers have suggested. The use of such an expression implies ignorance of even the elementary facts of histology. When seen in stained sections among blood-clot the villi are very striking objects, and in order to facilitate their recognition Fig. 3 has been prepared. They usually appear in sections as clusters of circular bodies; ten or more in fortunate sections may be counted together. More frequently they occur in groups of three or four, and often a wide section of clot will be examined without finding more than two or

three. Under a low power they present an external layer of epithelial-like cells, the central space being occupied by cells of irregular shapes. When examined under a high power the limiting layer is seen to be formed of a perfectly regular row of cubical epithelium; sometimes two rows of epithelium are present. The retention of an impregnated ovum in the Fallopian tube leads to occlusion of the abdominal ostium, an event usually complete by the sixth, but often delayed to the eighth, week following impregnation. It is therefore a comparatively slow process. (When the



FIG. 2.

Tubal Mole. It shows the excentric position of the amniotic cavity. A, the amniotic cord. B, the amnion. This specimen is in the possession of Dr. W. Walter.

ovum is lodged in the ampulla of the tube the ostium cannot close.) So long as the tubal ostium remains open the ovum is in constant jeopardy of being extruded through it into the peritoneal cavity, especially when the ovum lies near, or in, the ampulla of the tube. When an impregnated ovum is thus extruded from the tube into the general peritoneal cavity it is invariably in the condition of a mole, and the accident is always accompanied by hæmorrhage. The extrusion of a mole in this way is indicated by the term, "tubal abortion." Free hæmorrhage may occur from a gravid tube and the mole be still retained, in consequence of its attachment to the wall of the tube. Under such conditions the bleeding may be repeated; this is known as "incomplete tubal abortion." A gravid tube may rupture, and the mole slip into the peritoneal cavity

through the unclosed ostium (Fig. 4.) The amount of blood which may escape in these cases is truly astonishing. The following is a summary of the views contained in this paper: (1) The transformation of a tubal ovum into a mole is beyond doubt. (2) The



FIG. 3.

A, Chorionic Villi from a tubal mole (magnified) embedded in blood-clot. B, Villi highly magnified.

majority of specimens described as examples of hæmatosalpinx are gravid tubes. (3) Rupture of a gravid tube and tubal abortion are the common causes of pelvic hæmatocele. (4) Mesometric rupture of a gravid tube is a common cause of pelvic hæmatoma. (5) Every clot of blood found in a Fallopian tube is not a tubal

mole. Since the discovery of the tubal mole, specimens of occluded Fallopian tubes filled with blood, independent of tubal pregnancy, are now found to be infrequent. In the last report of the Museum of the Royal College of Surgeons (1892) a description is given of

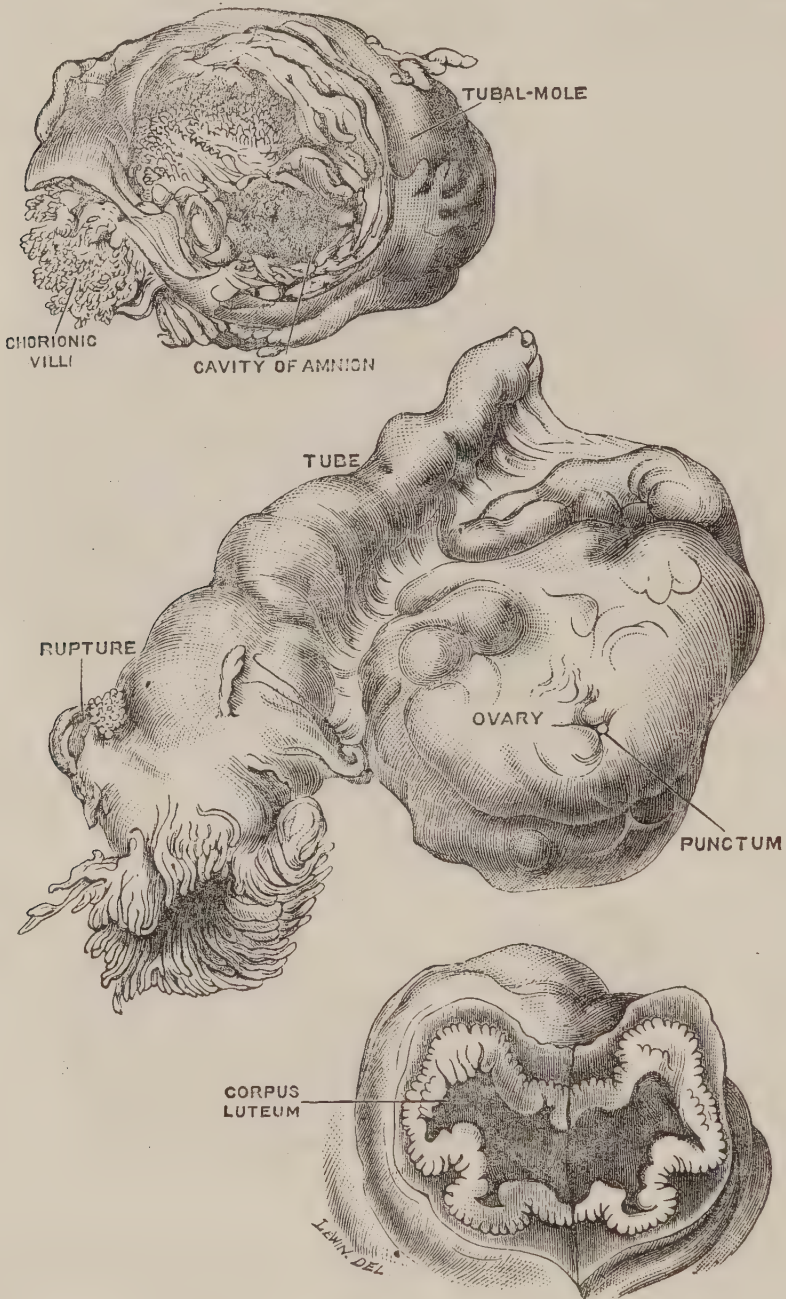


FIG. 4.

Fallopian Tube in which rupture occurred. The ovum escaped through the unclosed ostium, and at the time of the operation was lying among the fimbriæ of the tube.

are now found to be infrequent. In the last report of the Museum of the Royal College of Surgeons (1892) a description is given of

an "Unequivocal Example of Hæmatosalpinx." This is a fair indication of the revolution which has taken place in our knowledge of the early stages of tubal pregnancy.

Muret (*Zeitsch. f. Geb. und Gyn.*, vol. xxvi., heft 1) gives certain cases of early tubal pregnancy which came under his notice in the Strasburg Hospital for Women. After giving very detailed descriptions of the clinical history of each case, and exact accounts of the pathological appearances presented by the parts removed by operation, he sums up as follows:—

(1) It will be found useful, in accordance with the course taken by the abortion, to distinguish between simple complete tubal abortion, where the entire ovum is expelled from the tube, and imperfect protracted tubal abortion, where portions of the ovum remain in the tube (tubal mole). (2) Complete tubal abortion, accompanied by more or less severe non-recurrent symptoms, leads to the formation of hæmatocele, which may take any of the known courses. (3) Symptoms of acute internal hæmorrhage are less marked in complete tubal abortion than in rupture of the pregnant tube; but appearances of severe shock may occur which may be explained partly by the painful tubal labour pains in very excitable nervous systems, and partly by the influence of the blood upon the peritoneum. Sugar may occur incidentally in the urine in the acute attack. (4) In imperfect tubal abortion hæmorrhage leads to destruction of the ovum and to formation of a mole in the tube. When the ostium abdominale is open, the blood effused into the tube passes by it into the abdominal cavity, where it leads to the formation of hæmatocele. So long as the degenerate ovum or any portion of it remains in the tube, it leads, as in protracted uterine abortion, to increasing recurrent hæmorrhage, resulting in enlargement of the hæmatocele. The clinical aspect consists, first, in tubal labour pains and expulsion of a decidua, then in often-recurring attacks of labour-like pains with symptoms of internal hæmorrhage; whilst locally, first a swelling of the tube, then the formation of a gradually increasing hæmatocele can be traced. During the attacks symptoms of acute anæmia may appear in a high degree; but the most characteristic feature is frequent recurrence of the attacks. (5) Occasionally with tubal moles a high degree of attenuation of the tubal wall is found at the point of insertion of the degenerated ovum, even when the ostium abdominale is wide open, and without there being much distension of the tube. This attenuation of the tubal wall may best be explained by a purely local expansion of the wall, caused by the effusion of blood lying originally only between the wall and the ovum. It is probable that an increase of expansion and attenuation of the wall thus

produced may occasionally lead to rupture of the tube at this place, even when the ostium abdominale remains open. (6) In protracted tubal abortion, with open ostium abdominale, the removal of abortional residue or the tubal mole, with conservation of the Fallopian tube, is to be regarded as the goal of treatment; in most cases, however, removal of the whole Fallopian tube will be a necessity. Therefore, when protracted tubal abortion is diagnosed, laparotomy is the only operative treatment possible, as every operation by the vagina is to be rejected. (7) Upon certain occasions, and under conditions which are not thoroughly explicable, hæmatocele extra-uterina may be so constituted that it can be enucleated like a tumour. In laparotomy an attempt at enucleation should always be made before opening a hæmatocele. (8) The first period after interrupted tubal gestation occurs in the course of the first six to seven weeks following the complete termination of abortion or removal of the tube (in protracted tubal abortion). Subsequent diagnostic conclusions can occasionally be drawn from this condition of the catamenia.

Walter (*Brit. Med. Journal*, Oct., 1892) gives an account of a case of tubal gestation in which both tubes were gravid and in which operation was followed by recovery. The history of the patient was as follows: The patient had missed her period in May and June. During the whole of June she was laid up in bed, suffering from abdominal pain. She also, at the same time, suffered from sickness and pain in the breasts, but did not think she was pregnant. The vaginal examination showed the uterus to be normal in size and position. In the left broad ligament and close to the uterus was felt a mass the size of an orange. Four months later I saw her again. She was then suffering very much from cough and bronchitis. She still had the pain during defæcation, and had menstruated regularly since the last week in July. On bimanual examination, the uterus was found as before; the swelling in the left broad ligament could be outlined and felt as large as a hen's egg, and semi-cystic. Her pelvic symptoms being less urgent than before, it was thought advisable to postpone operation until her cough became better, and it was not until February 19, 1892, that she was readmitted into hospital. We then discovered that she menstruated at the end of December, 1891, but missed her period in January, and menstruated again on February 17, or two days before her return to hospital. During these seven weeks of amenorrhœa she suffered a good deal from sickness. On February 21, 1892, her period having ceased, a vaginal examination was made, and the following change was found to have taken place since the examination in December.

The uterus remained normal in size and position, the tumour in the left broad ligament was still the same, but on the right side of the uterus a new swelling could be felt, cystic in character, and extending transversely behind the uterus. The uterus and both swellings were matted together. At the operation, which took place next day, the left tube was found to be mainly occupied by a tubal mole, and the amniotic cavity held an embryo 6 c.m. in length. The right tube was also found to be occupied by a tubal mole. The amniotic cavity was persistent, but no embryo was detected.

Mackenrodt (*Zeitsch. für Geburt. und Gyn.*, band 23) has published a case of bilateral tubal pregnancy which he observed in a woman aged thirty-two. In May, 1890, she was seized with symptoms indicating rupture of a gravid tube; operation was refused. In October, 1891, she was seized again with the symptoms of rupture of a gravid tube. On this occasion the abdomen was opened and a gestation sac the size of a goose's egg removed from the left side. On the right side a second sac, surrounded by matted intestines, was found; it contained foetal bones. The patient made a good recovery.

Veit, of Berlin (*Zeitsch. für Geburt. und Gyn.*, vol. xxiv., 1892, p. 327), lays down a rule to guide the observer in this important distinction. When the tube is found filled with fluid blood, the case is to be reckoned, in almost every instance, as primary hæmatosalpinx, of which the causes are disease of the mucosa, wounds, or torsion of the tube. The retention of small fragments of chorion will also set up bleeding, a condition homologous to the hæmorrhages from the uterus when pieces of membrane are retained after abortion. The closure of the ostium, or obstruction of the tube by the pressure of an external band of adhesion, accounts for the retention of the blood and distension of the tubal canal. But when the abdominal end is open and the tube distended, nevertheless, with blood, the tube is nearly always the seat of ectopic gestation. In such a case the blood is almost certain to be found coagulated, the clot being firmly connected with one part of the tubal wall. When the blood is found fluid, with a patulous ostium, it is a sign that tubal abortion has just occurred, the ovum having been expelled and its place filled by recently shed blood. Exceptions to the above rules—that is, irregular conditions of the tube associated with hæmorrhage—are only seen when the tube is the seat of malignant disease.

IV.—OPERATIVE DELIVERY.

Various papers have appeared during the present year calling attention to the advantages to be obtained by the use of Champetier

de Ribes's bag. These papers are of great interest, and give full details of the mode of use of the balloon, and of the results to be gained by its introduction. It seems certain, from the popularity which the bag has obtained in France, as well as from the favourable reports obtained from English obstetricians, that a more extended trial will show that it is a distinct addition to our resources in operative midwifery.

Cullingworth (*Lancet*, Dec., 1892) believes that the axis-traction forceps constitutes the most important improvement which has been made in the construction of the instrument since the introduction of the pelvic curve. No one who has used it sufficiently often to overcome the slight difficulty at first experienced in its manipulation will ever willingly return to the older form. It can not only accomplish all that the older instrument can accomplish, and do it more easily, but it can accomplish more—for it will not infrequently succeed where the latter has failed. He is himself firmly convinced that the general adoption of the principle at least of axis traction, the truth of which is capable of mathematical proof, is merely a question of time. It was in the form of Professor Simpson's modification of Tarnier's forceps that he first became practically acquainted with the instrument. It will therefore be readily understood that, as a mere matter of sentiment, he has been loth to suggest any alteration in the Edinburgh model. When, however, in the year 1889, Down Brothers informed him that they were about to make some axis-traction forceps in order to meet the demand consequent upon his recommendation of them, and asked him which pattern he should recommend them to adopt, it seemed a suitable opportunity for proposing some slight modifications in Professor Simpson's instrument that experience had convinced him would still further increase its value. These proposals they at once proceeded to carry into effect. The instrument differs from Professor Simpson's chiefly in being generally firmer and more unyielding, in being furnished with stronger screws, and a stronger stud on the traction plate, and in its being made entirely of metal. The object of these alterations is to provide an instrument that will not bend; that, being made especially strong in its weakest parts, will not be likely to fail at the supreme moment by the giving way of those parts; and that, by having no woodwork about it, can be rendered thoroughly aseptic by boiling. The total length of the instrument is $14\frac{1}{2}$ inches; the handles are $5\frac{1}{2}$ inches long, the shanks $2\frac{1}{2}$ inches, and the blades, measured along the chord of the arc, $6\frac{1}{2}$ inches. The shanks are very strong, and are $\frac{3}{4}$ inch apart; the greatest width

between the blades is from 3 inches to $3\frac{1}{8}$ inches; and the distance between their extremities (when the instrument is locked and the application handles are in contact) is $\frac{3}{4}$ inch. Each blade has a maximum breadth of $2\frac{3}{16}$ inches, and a fenestra $4\frac{1}{4}$ inches long by $1\frac{1}{2}$ inch wide. The traction rods are screwed on to the solid part of the blade immediately below the fenestræ, so as to allow of antero-posterior movement only. A key is sent with each instrument for unfastening these screws for cleaning purposes. The fixation screw is the same as in Professor Simpson's instrument, but is somewhat stronger. The design of the locking plate and the traction handle is also the same, but again the screws and knobs are of stronger construction. He has purposely delayed publishing any description of it until its practical value has been repeatedly tested. It has now been used a good many times, both at the General Lying-in Hospital and in the maternity department at St. Thomas's Hospital, and has been found to be a highly efficient instrument. The delay has enabled him to suggest an important alteration of the original model. The blades were unnecessarily wide apart between the fenestræ and the shanks, causing premature distension of the perineum as the head descended. That defect has been removed. The instrument is, he is aware, heavier than is desirable; but this fault appears to him to be more than counterbalanced by the ease with which, being constructed entirely of metal, it can be efficiently disinfected. It has been a matter of considerable interest and gratification to him to observe that Milne Murray of Edinburgh, approaching the subject from a more theoretical standpoint, has quite independently suggested a modification of Professor Simpson's instrument that in many respects resembles the one here described. He is sure Murray will believe him when he says that he had not seen Murray's paper at the time his own suggestions were being worked out. It may be useful, in conclusion, to give a few plain directions for applying the axis-traction forceps. (1) Introduce first the left blade, to which the traction bar is attached. (2) Before introducing the right blade see that its traction rod is swung forwards, otherwise there will be difficulty in locking the instrument. (3) When the blades have been locked, swing back the traction rod of the right blade and hook it on to the traction plate. (4) Holding the instrument by the application handles, estimate the degree of compression that is desirable, and tighten the fixation screw so as to keep up the compression at that point. (5) After this has been done, leave the application handle untouched. (6) Make traction with the traction handle, keeping the traction rods parallel with

the shanks. (7) Complete the delivery of the head before removing the forceps. This gives the operator greater command over the head, enabling him to prevent its too rapid expulsion and to make traction when there is least strain. (8) As soon as the head is born, loosen the screw, set free the right traction rod and remove the blades, first the right and then the left.

[This paper cannot fail to prove interesting to the practitioner of midwifery, and to lead to a more extended use of the axis-traction forceps. Their advantage has been so amply proved in cases of face presentation and occipito-posterior position that it is certain that their use will become year by year more general, to the exclusion of the present less scientific instrument.]

Siegfried Stocker, of Lucerne (*Centralbl. f. Gyn.*, No. 32, 1893), performed the operation of removing a cancerous uterus successfully, on April 21, 1892, in a patient six months pregnant. She was thirty-six years old, married twenty years, and had borne eight children. The last period occurred at the end of October, 1891. On December 20th a brownish discharge, followed by a little blood, was observed. This symptom continued. By April the bleeding was often serious. Cancer of the cervix was detected; it formed a mass which projected into the dilated vaginal canal, and was beginning to break down. The foetus was living. At the operation the abdominal cavity was opened, the uterus drawn forwards, and the broad ligaments ligatured and divided down to the level of the inner os. An elastic ligature was passed round the uterus, which was then opened. The foetus was next extracted; it had died during the operation. The uterus and appendages were then cut away; the canal of the cervix was disinfected with concentrated carbolic acid; the abdominal wound was closed. Then the patient was placed in the lithotomy position and the cervix removed, as in total extirpation, from the vaginal side. Very little blood was lost. On the eighth day the abdominal sutures were removed; on the fifteenth, and later, the vaginal threads were taken away. A small bed sore gave a little trouble, but the patient was well enough to leave on the twenty-eighth day. **Bischoff** and **Schröder** both operated—by Freund's method—near the end of pregnancy for the removal of the cancerous uterus. Both patients died on the day of operation. **Hofmeier** removed a cancerous uterus through the vagina in the middle of the second month. **Spencer Wells** operated in the sixth month, removing the uterus completely through the abdomen, after Freund's method. **Zweifel** also removed a cancerous uterus entire in the middle of pregnancy. Like Stocker, he operated both from the abdomen and the vagina. All these operators acted upon the

score that cancer makes rapid progress during pregnancy. The sacrifice or risking of the child seems quite justifiable. The double operation, after Zweifel, is preferred by Stocker, since it saves the patient from the risks entailed by drawing the cancerous mass through the abdominal cavity and wound. The area of disease can be best seen through the vagina; and, lastly, the danger to the ureter is less than in Freund's operation.

Murdoch Cameron (*Brit. Med. Journal*, Dec., 1892) writes on the prevention of hæmorrhage in Cæsarean section as follows:—
 “Hæmorrhage in Cæsarean section may have its origin in the uterine incision, the presence of the placenta in the line of incision, or from uterine inertia. In my earlier cases I found that pressure with the fingers and making a small incision to begin with did much to prevent bleeding. Desiring, however, to prevent even oozing during the primary incision, I have introduced the use of a pessary for compressing the uterus at this stage, and this enables the operator to cut down upon the membranes without puncturing them. Even when the placenta intervenes, this method of pressure is beneficial not only in preventing bleeding, but also in permitting us to observe the placental tissue, which is recognised from its darker colour. Should the placenta intervene, the operator may either cut right through it, or, as I have also done, separate it first with the finger in the median line whilst extending the incision, and afterwards upon the left side with the left hand, till the membranes are reached, which are then perforated, and the child's head turned out with the fingers. Should the feet present at the incision, they may be seized, and the child extracted without delay. If the shoulder presents, a hand should be firmly pressed upon it to prevent its expulsion. The placenta should never be separated and extracted before the child, as recommended by some writers, as any diminution in the contents of the uterus permits contraction, and so complicates the extraction of the child and necessitates an enlargement of the incision to prevent laceration, usually at the lower angle of the wound. With the after-removal of the placenta the membranes are more effectively removed—a point never to be overlooked. Likewise the uterus should only be everted after the birth of the child, the abdominal cavity being protected by large, warm, flat sponges placed behind and round about the organ. It is quite unnecessary to avoid the middle line, as recommended by some authors, in cases where the position of the placenta is supposed to be in front, as by the above method little bleeding should occur. At no point in the operation can the assistant be more serviceable than after the removal of the placenta, as it is when the uterus is entirely empty that serious

bleeding is most likely to occur. Very free bleeding will take place from the wound unless the uterus is immediately seized by the operator and held until the assistant has securely grasped it, with the lips of the wound everted. With a firm grasp the assistant almost entirely prevents bleeding from the wound whilst the stitches are being introduced. These sutures, from seven to ten in number, should embrace nearly the whole thickness of the uterine wall. Before tying them, the cut edges should be brought together, and the entire uterus, rolled in a large, warm, flat sponge, should be steadily and firmly compressed with both hands, as this at once ensures contraction. After the sutures have been tied, the uterus is again wrapped in a large flat sponge and compressed as before. The sutures having been cut and the Fallopian tubes tied, the organ may now be replaced in the abdominal cavity, which should be carefully sponged out."

Galabin (*Clinical Journal*, May, 1893) remarks :—"This woman has a contracted pelvis, and some time ago when performing Cæsarean section on her I thought it advisable to tie the Fallopian tubes with kangaroo tendon in the way recommended, to prevent her again becoming pregnant. She came here, however, the other day about three months pregnant. I have met recently with another case in which the tubes were tied with fishing gut in Cæsarean section by another operator, and in which the patient became pregnant afterwards. It should be understood in future that to sterilise the woman it is necessary to divide the tubes between two ligatures or to remove the ovaries.

"The question arose whether I should then artificially induce abortion, or whether I should leave the woman for other treatment at a later stage. I decided on the former, as she herself declined the alternative of a second Cæsarean section. She had previously had six pregnancies, of which only the last, in which Cæsarean section was performed, resulted in a living child. As she was only three months pregnant, I determined to rapidly empty the uterus.

"The steps for doing this are as follows :—A laminaria tent was inserted in the evening, and replaced next morning by two tupelo tents. At 2 p.m. the cervix was partially dilated, but not enough to admit the finger through the internal os. No pains had commenced. The patient was then placed under an anæsthetic and the cervix dilated with Hegar's dilators up to No. 22. I then tore away a portion of the membranes with ovum forceps, letting out the liquor amnii, and proceeded to evacuate the uterus by means of finger and ovum forceps."

Tarnier (*Sem. Méd.*, April 12, 1893), in a paper read before

the Obstetrical Society of France, denies that Cæsarean section and symphysiotomy should entirely replace the induction of premature labour, on account of the safety with which they can be performed with antiseptic precautions. In the practice of the latter, with the same precautions, he has had excellent results. Between November, 1890, and November, 1892, he has had 44 cases of induced labour. With antiseptics, the "couveuse" and artificial feeding, both mother and child have the best chances; in fact, only one mother was lost in the whole 44, and she was dying of pernicious anæmia when operated upon. The infantile mortality was 18 per cent.; 4 children (including the infant whose mother had pernicious anæmia) were stillborn, and 4 died after birth. As to the causes demanding interference, they were:—Cardiac disease, 1 case; progressive amaurosis, 1 case; pernicious anæmia, 1 case; the remaining 41 cases having contracted pelves. In 29 cases Tarnier used his dilator alone; in 9 he also used his "écarteur"; in 3 only he employed the bougie; and in 3 his dilator with Champetier de Ribes's bags. These results, Guéniot observed, establish the excellence of induced premature labour.

Herman (*Brit. Med. Journal*, Jan., 1893) writes on the induction of premature labour by Champetier de Ribes's bag. He considers this instrument a great improvement on Barnes's bags, and claims for it the following advantages:—(1) With Barnes's bags successive sizes have to be put in, one after the other; and the introduction of each needs a visit from the doctor, and manipulations troublesome to him and disagreeable to the patient. One operation only is required with Champetier de Ribes's bag; when this is in its place it dilates the cervix to the full extent without any need for further interference, and the doctor may leave the patient, trusting the nurse to send when pains become strong. (2) Barnes's bags are made of indiarubber, which stretches when fluid is pumped in. Hence the operator has no clear indication when the bag is full; and hence, also, if the cervix is rigid, the part in the cervix remains unexpanded, while the part above, and especially the part below, bulge out instead. Champetier de Ribes's bag is made of inelastic material; when it is full no more fluid can be pumped in, and it does not alter its shape. (3) Barnes's bags are put in with a rod or sound in a little pocket at the side of the bag. This little pocket is very apt to give way. Modifications have been made in the bags by others to remedy this imperfection; but he has seen no way so satisfactory as the convenient forceps by which Champetier de Ribes's bag is put in. (4) It is not possible with Barnes's bags

to get complete dilatation of the os. Champetier de Ribes's dilates it fully. (5) In the introduction of Barnes's bags the membranes are sometimes ruptured, and the presence of the bag in the lower segment of the uterus sometimes displaces the presenting head, making a natural into a transverse presentation. With Barnes's bags these are serious drawbacks, for if these accidents have happened there is much risk to the life of the child in turning and extraction. They may happen also with Champetier de Ribes's bag, but when it is used they are not important, for the bag completely fills the cervix uteri and retains the greater part of the liquor amnii, and when the work of the bag is complete, the child can be at once turned and extracted without difficulty. (6) Barnes's bag partly dilates the cervix, but if pains are not provoked (and he has known this happen) when the bag is removed, the cervix may recontract. With Barnes's bag there is no way of accelerating labour if pains are weak. If Champetier de Ribes's bag be used, and the first stage is protracted by weakness and infrequency of pains to an undesirable extent, we can accelerate dilatation by pulling on the bag. When folded up the bag is rather thicker than a finger, hence it cannot be put into a cervical canal that has not reached this degree of dilatation. Dilatation must be started in some other way by a bougie or a tent, or by a dilator invented by J. W. Taylor, of Birmingham, and similar in principle to Champetier de Ribes's, but smaller.

Herbert Spencer (*Brit. Med. Journal*, Jan. 7, 1893) has employed Champetier de Ribes's bag for induction of premature labour in 4 cases of contracted pelvis, and has found that the labour took twenty-three, twenty-six and a half, seven, and twenty and a quarter hours respectively. Leopold has shown that the Krause method takes on an average eighty hours eighteen minutes to effect its purpose. Champetier de Ribes's bag has, therefore, a great advantage over the bougie in point of rapidity, and the method, therefore, may be said to be a safe one. The rupture of the membranes and separation of a portion of placenta, which sometimes occur, are of slight importance in this method of treatment, as the bag is a good substitute for the membranes, and the hæmorrhage ceases when it is distended. The bag has one real disadvantage—that it displaces the head. This can usually be corrected by abdominal manipulations, and by removing the bag when labour is well advanced. In cases in which a malpresentation occurs, the full dilatation produced by the bag is a valuable preliminary to treatment.

Sequeira (*Brit. Med. Journal*, March, 1893) records a case of

placenta prævia treated by Champetier de Ribes's bag. On the morning of Feb. 17th, 1893, he was called to Mrs. C——, eight months pregnant with her tenth child. She had had a sudden loss of blood from the vagina, without any apparent cause. He found that she had had no pains, and that the hæmorrhage had been very copious whilst it lasted. Examination revealed the os very high up, and sufficiently dilated to admit the introduction of one finger. More complete examination revealed the soft placental mass presenting. In the evening, the hæmorrhage having been slight since the morning, Herman saw the case in consultation, confirmed Sequeira's diagnosis, and agreed with him that it was necessary to bring on labour at once, suggesting the use of Champetier de Ribes's bag. This was introduced by him with strict antiseptic precautions, and filled with warm water. The patient passed a quiet night, with very little discomfort from the bag. No further hæmorrhage occurred, and the labour pains commenced about 7 a.m.—that is to say, twelve hours after the insertion of the bag—and on Sequeira visiting her again at 10.30 a.m., the os being sufficiently dilated, the bag was emptied. At the same time he introduced his left hand, and, first encountering the partially detached placenta (fully one-third of its surface was free), found the child lying obliquely, vertex over pubes and face looking backwards. Grasping the left foot he had no difficulty in turning and delivering, the placenta following within a few minutes. The child, a boy, was alive and well nourished. The uterus contracted firmly, and the case presented no further difficulty. The patient made a rapid recovery, and the child was thriving when he left on the tenth day. He has recorded the case to testify to the satisfactory manner in which Champetier de Ribes's "ballon" fulfils its purpose, and can with confidence recommend it in all such cases. It is easy of application, arrests the hæmorrhage at the same time that it dilates the os, and, with antiseptic precautions, seems to him perfectly safe and reliable. He mentions, in conclusion, as a coincidence, that the patient's sister lost her life from hæmorrhage from placenta prævia five years back.

Heelas (*Lancet*, Aug., 1893) gives the clinical histories of 12 cases of induction of labour by Champetier de Ribes's bag. An analysis of these shows that in 8 cases the bag was used to induce labour for contracted pelvis; in 1 for fibroids of the uterus, in 1 for an inflammatory swelling around the uterus and vagina, in 1 for accidental hæmorrhage, and in 1 for premature rupture of the membranes. In 5 cases a bougie or Barnes's bag had been previously inserted. In 2 cases a vertex presentation

was converted into a breech, whilst in 2 others the head was displaced towards an iliac fossa. It will be observed that in every case, with one exception (Case 8), delivery was completed within twelve hours of the introduction of the bag. In Case 3 there was alarming post-partum hæmorrhage, but there is no reason to attribute this to the use of the bag. In Case 7 the bag burst whilst in position, but no harm resulted; the bag was distended (as in each case) with perchloride of mercury solution (1 in 4,000). Case 8 was the least satisfactory. Altogether the bag was in position for forty-four hours before full dilatation of the os was brought about. This is explained by the fact that, although there was considerable continuous pain referred to the abdomen, there was a comparative absence of regular labour pains. The patient's previous labours were tedious. She had had infantile paralysis, which may have had some influence. From the table below will be seen at a glance the time taken between the introduction of the bag and the commencement of pains, the expulsion or removal of the bag and completion of delivery respectively; also the time between the expulsion or removal of the bag and delivery.

Cases.	Pains commenced after introduction of the bag.	Bag expelled.	Delivery after introduction of the bag.	Delivery after expulsion of the bag.
1	1 hour	5 hours	12 hours	7 hours
2	5 hours	† 11 hours	11½ hours	½ hour
3	½ hour	9¼ hours	9¼ hours	Immediately
4	Immediately	1 hour	3 hours	2 hours
5*	Immediately	4¼ hours	4½ hours	¼ hour
6*	40 minutes	† 5½ hours	6 hours	½ hour
7	Bag burst	—	—	—
8*	—	{ First time } { 12 hours † }	—	—
„	—	{ Second time } { 32 hours }	{ 32 hours } { (after } { second intro- } { duction) }	¼ hour
9	Immediately	7 hours	7¼ hours	¼ hour
10*	20 minutes	10 hours	10 hours	Immediately
11*	Immediately	70 minutes	70 minutes	Immediately
12	1 hour	8 hours	8 hours	5 minutes

* A bougie or Barnes's bag had been previously inserted temporarily.

† Bag removed.

V.—SYMPHYSIOTOMY.

The records of this operation for the past year show that symphysiotomy has gained an assured place among the recognised

obstetric operations, and that the objections urged against its practice have been proved to be valueless and erroneous. It is clear now that a much greater separation of the pubic bones is possible than was considered at one time practical; also that firm union after operation is the rule and not the exception. It seems to be unavoidable, but nevertheless it is a matter of regret that when a new operation is brought forward, men are found who will make trial of the operation in cases absolutely unsuitable. Symphysiotomy is clearly indicated in only a few selected cases, and is to be used in cases where the child is living and the degree of pelvic contraction only moderate. Cases are already recorded where the operation has been done after the death of the child instead of resorting to craniotomy simply, or in pelvic conditions where the distortion is so great as to render the birth of a living child impossible. Such attempts can only bring discredit on the operation, and hinder its application in really suitable cases.

Pinard, lecturing on Symphysiotomy at the Clinique Baudelocque on December 7, 1892, gave the clinical histories of 13 cases on which the operation had been done during 1892, and was able to show all the mothers and 10 of the infants alive and in good health. He referred to the three questions which he had formulated in the previous year—viz. : (1) Can one by symphysiotomy obtain, without any grave lesion, a notable enlargement of the pelvis? What can be the extent of this enlargement? (2) Is symphysiotomy within reach of all accoucheurs, and how ought it to be practised? (3) What are the sequelæ of the operation as regards consolidation of the pelvis while standing and walking, and in subsequent pregnancies? As an answer to these questions he proceeded to quote the clinical histories of the 13 cases already mentioned. In every case the mother had made a good recovery; the pelvis was as firm as before the operation, and there was no trouble in micturating or in standing. The result was therefore as satisfactory and as complete as possible on the maternal side. He had been less happy in the case of the infants, for although all were extracted living, he had only been able to show 10, all indeed equally well, but the other 3 died—the first on the third day after birth (Case 1), the second on the second day after birth (Case 4), and the third in sixteen hours after birth (Case 13). If we look for the cause of death in each case, we see that in the first death was produced by fracture of a parietal bone at the moment of extracting the after-coming head. The preliminary separation of the pelvis was certainly not sufficient, considering the size of the head and the amount of pelvic contraction. The second child died of congenital feebleness, for it showed no lesion

at the necropsy. As to the third child, it succumbed, like the first, to a fracture, this time of the frontal bone. Pinard lays stress on the following points:—(1) That before all obstetrical attempts one must be sure that the division of the pelvis is complete, so that the foetus may have nothing to overcome by violence and at the peril of its life—*i.e.*, the pubes must be separated for at least 4 centimètres. (2) It is preferable to have a vertex presentation. (3) That the forceps should be applied to a well-flexed head; and (4) that the delivery of the placenta should not be long delayed. As regards the place which symphysiotomy ought to occupy among obstetrical operations, he can only say that this place should be a foremost one, for it is most essentially a conservative operation. It is for Pinard a great pleasure to see that Professor Leopold, the great performer of Cæsarean sections, does adopt and put in practice his method. In conclusion, one may say that when a perfect application of the forceps has not been able to engage the head after moderate tractions, there is only one thing to be done, and that is to withdraw the instrument and practise symphysiotomy.

Smyly (*Brit. Med. Journal*, April, 1893) reports the first successful case of symphysiotomy in the United Kingdom. The patient, Mrs. M——, aged forty-three, was somewhat below the middle height, but without obvious deformity or sign of rickets. She had suffered for the past eight years from chronic articular rheumatism, which had latterly almost completely confined her to bed. Her first eight pregnancies had terminated naturally, but the ninth labour was difficult and very protracted. Her usual medical attendant—a practitioner of considerable skill and experience—having failed to deliver her with forceps, sent her into the Rotunda Hospital, where a dead child was extracted. Upwards of three years after she again became pregnant, and was admitted into the Rotunda on November 19, 1892, labour having already commenced. On examination the abdomen was found to be pendulous, and the recti muscles widely separated. The uterus hung over to the left side, and the child presented obliquely in the second position, with its head in the right iliac fossa; the os uteri was about the size of a shilling, and the membranes were intact. The sacral promontory could be easily reached by the finger, and the true conjugate of the brim, measured with Skutsch's pelvimeter, was $7\frac{1}{2}$ centimètres, or about 3 inches. The presentation having been corrected and a binder applied, the patient was directed to lie as much as possible on her right side. The labour pains were short and inefficient, and continued so throughout, in spite of hot douches. On November 21 the membranes ruptured,

but little progress was made; at night morphine was administered hypodermically, and she had some sleep. During the two following days the os continued slowly to dilate, but the head did not enter the brim of the pelvis. On the evening of November 23, the fifth day of labour, the funis prolapsed, and meconium began to come away. The contraction ring could be easily felt a hand's breadth above the pubes, so that version was impracticable. The head was freely movable above the brim, with the sagittal suture in the transverse diameter. Forceps were applied, but grasped the head so unfavourably that he abandoned the attempt to deliver by their means and determined to resort to symphysiotomy. The patient was placed in the lithotomy position, with the buttocks over the end of the couch, and two assistants held her legs on each side. The mons veneris was shaved and, as well as the vulva and vagina, carefully asepticated. The soft parts were divided with a scalpel in the usual manner, and the first finger of the left hand passed down behind the symphysis, along which a probe-pointed bistoury was guided. The edge of the knife had scarcely touched the cartilage when the bones sprang apart, tearing the soft parts beneath, including the urethra. The child was immediately and without any difficulty expressed by his assistant, and, though deeply asphyxiated, was resuscitated, and is now alive and well. It weighed $7\frac{1}{2}$ lbs. and measured 20 inches in length. A tolerably brisk hæmorrhage followed the rupture of the soft parts, but was easily controlled by securing a few vessels. The urethra was sutured by a catgut suture; the ends of the bones approximated; a few silk sutures closed the wound, which was dressed in the usual manner. A firm bandage was applied around the hips and the patient put to bed. Convalescence was delayed by the formation of a bed-sore, but she ultimately made a good recovery. The urethra did not completely heal, and there was incontinence of urine, but he was fortunate in being able to cure this by a subsequent operation. Excepting the rheumatic affection already alluded to, she went home in perfect health. From the results of this operation in the 54 cases recorded in Harris's interesting pamphlet, it appears certain that it will take a permanent position amongst our methods of treating labour complicated by pelvic deformity. It has the double advantage of being easy of performance and successful in its results. If Smyly's case be added to those tabulated by Harris, there were, up to the end of last year, 55 cases with only one maternal and five foetal deaths.

Oehlschläger (*Centralbl. f. Gyn.*, No. 24, 1893) records a case of "spontaneous" parting of the symphysis. He attended the first labour of a delicate thin-boned girl aged twenty. She had two

severe convulsions as labour set in, and the legs were œdematous; albuminuria was also detected. As it was clearly necessary to end the labour as quickly as possible, Oehlschläger put on the forceps. He had to employ considerable force. As the head was being brought down a loud snap was heard by the operator and the patient's sister, who assisted. The symphysis had parted to the extent of an inch. The forceps could then be used with ease, and a living child weighing 9 lbs. was delivered. No more convulsions occurred. On the next day a broad, well-padded belt was applied to the pelvis. There was no fever. At the end of three weeks the patient was able to stand, but the labour occurred as recently as April 27, 1893, and when the report was written—early in June—there was still a gap two-fifths of an inch wide. The belt should be strapped as firmly as possible in these cases. At first, any movement of the thighs, by the nurse or voluntarily, caused sharp pain.

At the April sessions of the Obstetrical Society of France several communications on symphysiotomy were read (*Sem. Méd.*, April 9, 1893). **Lepage** operated on a patient in her second pregnancy. A tumour of uncertain nature blocked the pelvis, and induction of premature labour was contemplated, when, at eight and a half months, labour pains came on and the child could not be delivered even with forceps. Symphysiotomy was performed and the child saved. Lepage found that elevation of the end of the bed and fixing the lower extremities was sufficient as after-treatment. **Queirel** performed the operation in the fifth pregnancy of a woman who had never borne live children. The child was delivered by forceps after division of the symphysis, and saved. The patient suffered no inconvenience. **Tellier** reported (through Varnier) a fatal case. The pelvis was rickety. After the division of the symphysis, free hæmorrhage occurred, chiefly from an artery apparently as long as the radial, which ran along the back of the right os pubis. The whole wound bled freely. The child was delivered alive with forceps. In pressing the pelvis apart during extraction—the foetal head was very large—the urethra and vulva were torn; the perinæum was also lacerated. The operation lasted over an hour. The damaged structures were sutured, but the patient died shortly after the operation. The sacro-iliac ligaments were found stretched and torn anteriorly. **Maygrier** performed symphysiotomy, also with a fatal result, on a woman in whom a pelvic fibroid obstructed labour. The patient's condition would not allow of Cæsarean section. The foetal head could not be extracted with forceps after the parting of the symphysis, and the cranioclast was used. The vagina was torn close

to the pubes during these manœuvres. The patient died suddenly of pulmonary embolism on the twenty-first day. There was no sign of any repair of the divided symphysis. Guéniot performed three symphysiotomies at the Maternité; two of the children and all three mothers were saved. In two other cases he refrained from operating, but now regrets it, as he had to perform craniotomy. Budin related a case in which he had been perplexed in the extreme. The patient, a primipara, had a rickety pelvis. Labour was slow, and the membranes had ruptured. The fœtal head presented in the right occipito-anterior position, meconium passed away, and there was evidence of meningeal hæmorrhage. The mother was in a state of abject fear of death, and cared nothing about her offspring. Budin, however, thought it right to try to save the fœtus. The forceps proved unavailing. Then he divided the symphysis and delivered the child alive with forceps. The prevesical plexus of veins bled freely. The child lived ten days; it had convulsions and spastic contraction of its arms. As had been expected, there was meningeal hæmorrhage. The mother recovered. Budin agrees with Morisani that symphysiotomy is a bad operation when the fœtus is dead or its vitality clearly compromised. In a similar case in future he would perform basiotripsy. Varnier said that the resuscitation of symphysiotomy had definitely settled the old dispute of forceps or turning in contracted pelvis in favour of the forceps. Version must be rejected. The forceps applied at the brim is not a good instrument; it prejudices the child. Leopold rejects Cæsarean section; basiotripsy in a living child is unjustifiable. Symphysiotomy and the forceps is the proceeding needed in contracted brim. The symphysis must always be parted first, before the forceps are applied. Pinard has done 19 symphysiotomies between February 4, 1892, and April 5, 1893. Fifteen were in multiparæ, 4 in primiparæ; all the mothers were saved, the 19 children were delivered alive, but 3 died within a few days. In 5 cases the operation was performed to terminate induced labour; in 5 after failure of the forceps. The forceps were used, after the parting of the symphysis, in all the 19 cases but 1. Out of the 19 women, 16 had ended 30 pregnancies by—basiotripsy in 8 instances, the forceps in 9, induced premature labour 11, and version in 2. Only 2 children in these 30 labours were saved. A long discussion followed the reading of the important papers.

VI.—THE PUERPERAL STATE.

Handfield-Jones (*Lond. Med. Soc. Trans.*, vol. xvi.) draws attention to the pyrexia which is found in cases of anæmia due to

post-partum hæmorrhage. After calling attention to the anæmic fever that appears in pernicious anæmia, traumatic anæmia, and idiopathic anæmia, he gives the details and clinical histories of various puerperal patients in whom flooding was followed by rise of temperature, though other complications were absent, and in all other respects the puerperium ran a perfectly normal course. He points out that in almost all the cases the hæmorrhage is followed by a short period of subnormal temperature, a period which may only last a few hours, or may be protracted from twenty-four to forty-eight hours. It rarely seems to overstep this latter limit. In many of the cases it was noticed that the rise of temperature occurred within twelve hours after a severe bleeding, or, in other words, within so short a period that it was difficult to believe that septicæmia or inflammatory reaction could have any share in causing the pyrexia. Of course, in cases following delivery, one is not forgetful of the exalted sensibility of the great nervous centres, and that emotion, fear, anger, and other similar causes, lead to a rise of temperature ; but all such causes were undoubtedly absent in the cases under consideration. There can be no question that the rises of temperature were most marked in women possessing a highly-strung or nervous temperament, and he is well aware that he has seen cases in which the most severe hæmorrhage has occurred, and yet no rise of temperature has followed. These instances, however, have occurred in cases where the patients were of a phlegmatic or lowly organised system. As regards the duration of the pyrexia, the average was about a week, the shortest time noted was three days, and in one case the return to the normal standard did not occur until the end of the thirteenth day. *Causation of pyrexia.*—It is difficult to assign with certainty a definite cause for the rise of temperature noted, but, taking into consideration the exhausted state of the nerve-centres due to the loss of blood, the early period at which the rise occurs after the hæmorrhage, and the fact that the rise is most noted in women of a mobile temperament, it seems most reasonable to believe that the disturbance of the centres regulating the temperature is due to an induced condition of hyperæsthesia. An additional argument for this belief is found in the fact that the temperature falls *pari passu* with the decrease of the anæmia. Of course it has been suggested that the rise of temperature depends on the poisonous action of ptomaines, and that these latter, though constantly present, are only able to exercise their noxious influence when the resistant powers of the system have been lowered by some depressing cause, such as hæmorrhage. Judging, however, from the clinical records, it seems more reasonable to suppose

that the pyrexia depends on an unstable condition of the nervous centres than on the presence of poisonous particles in the circulation.

Cave (*Brit. Med. Journal*, Dec., 1892) gives a case illustrating the value of intravenous injection of saline solution for hæmorrhage. The patient had had severe flooding after a miscarriage; the pulse 148, weak and thready, the face very pale, and lips blanched. She lay in a lethargic state with her eyes half closed, languidly moaning; the respirations were deep and sighing. At frequent intervals she vomited, invariably when she took any milk and soda-water, Brand's essence, or champagne, all of which had been given her in small quantities. The uterine hæmorrhage had apparently ceased. After a hypodermic injection of ergotin the same treatment was persisted in until noon, when he saw her again; she was then decidedly worse. There had been only slight uterine flux, but the frequent vomiting had persisted, so that she retained nothing. She was very restless, and the pulse was now quite uncountable. At 1 p.m., she being then in a condition of imminent danger, five pints of saline solution were injected into a vein at the bend of the elbow. He had no special apparatus at hand, but the following simple armamentarium was sufficient:—A lancet and a pair of dissecting forceps, a needle threaded with silk, a silver Eustachian catheter, the indiarubber tube from a feeding-bottle, a small glass funnel, and the greenhouse thermometer. The solution was prepared with boiled water, of the approximate strength of 1 drachm of common salt to the pint. A tape being tied round the middle of the arm, the most prominent vein at the bend of the elbow was selected. This was readily exposed by pinching up the skin and transfixing with the point of the lancet. The vein was then dissected out and isolated for about half an inch of its length. The threaded needle was passed beneath it, and the silk cut at the eye, leaving a double ligature under the vein. These being drawn upon, untied, by an assistant, the vein was opened by a longitudinal slit, and the point of the Eustachian catheter inserted without the loss of a drop of blood. The distal ligature was now tied on the vein, while the proximal was also tied round the point of the catheter, which, on relaxing the tape on the arm, was filled with blood by reflux from the vein above. The funnel and tube were filled with the solution at the temperature of 99° F., the latter slipped over the large end of the catheter, and the solution allowed to flow. The five pints were introduced as quickly as possible, the patient rapidly improving meanwhile. The pulse at the end of the injection was 108, regular, and of fair volume. She shivered a

good deal just at the close, but this passed off in about ten minutes. There is little to add except that her recovery from this time was uninterrupted. The vomiting continuing, she was for twenty-four hours fed by the rectum only. In the evening she was delirious, but she slept a good deal in the course of the night, and the next day was carefully fed by the stomach. She once unguardedly sat up in bed, and immediately fell back in a swoon. Steadily improving, she was able to go for a drive at the end of three weeks, there being at that time still a little œdema of the legs, which later disappeared with the anæmia.

Herman (*Brit. Med. Journal*, Dec., 1892), after discussing the various modes of treatment of post-partum hæmorrhage, considers that in the worst class of cases there is no remedy equal to "continuous compression." If the uterus can be got to contract, and remains contracted, bleeding will stop. When the uterus responds either to iron injection or to gauze in its interior, by vigorous contraction, it will respond to other means. The worst cases are those in which the contractile power of the uterus is exhausted, and nothing will procure tonic contraction. Here the best and only remedy is prolonged and continuous compression. The uterus is too large to be compressed by one hand unassisted. Various modes of compression have been advised. One is to press the uterus backwards, with the hand in front of it, so as to compress it between the hand and the spinal column. But the spine forms a convexity with a hollow on each side, and the uterus, when pressed back against it, is apt to slip to one side of the spine, into a place where it cannot be so well compressed. Another suggestion is to put the hand behind the uterus and compress it between the symphysis pubis and the hand. Here the pressure of the symphysis is limited to a small area of the uterus. It has been advised to combine the two hands by putting one hand in the uterus and the other outside. This has been varied by substituting for the internal hand a dilated bag. Thus the uterus is compressed all round, within and without. But the objections to the use of iron to clot the blood and to plugging the uterus with gauze apply with greater force to this proposal. The uterus cannot contract properly with the hand or an inflated bag within it; and the procuring of uterine contraction must be the final aim of all our treatment, for by it alone can hæmorrhage be permanently stopped. We get by this means temporary compression at the expense of hindering the permanent natural compression which we want. There are other objections—the bruising of the uterus, which cannot be avoided; and the keeping open a channel through which germs of disease may get to the inside of the

womb. The right way, in his opinion, is to compress the uterus between one hand in the vagina and the other on the abdomen. In the left lateral position the left hand will naturally be used internally, the right outside. The internal hand may be laid flat (as suggested by Hamilton, of Falkirk), the body of the uterus being opposed to the palm, the cervix lying between the parted fingers. Zweifel has advised that the cervix be pressed

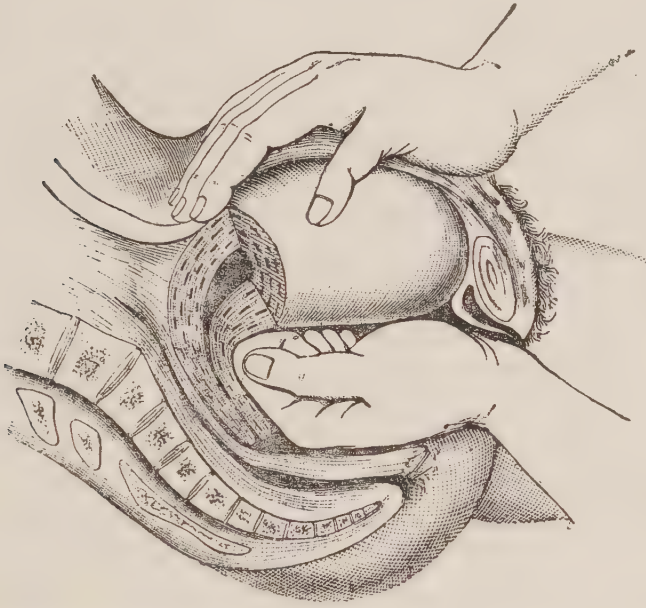


Fig. 5.—How to compress the Uterus to stop post-partum Hæmorrhage.

forwards with the fingers so as forcibly to anteflex the uterus. Thus the canal is kept so bent that blood cannot get out. But there is no benefit in keeping blood in the uterine cavity. We want to compress the vessels in the uterine wall, so that blood may not flow into the cavity. If such bleeding has taken place, the effused blood will, in proportion to its amount, hinder uterine contraction if it be thus retained. Blood effused into the uterine cavity should be expelled from it, not kept pent up in it. What seems to him the best way of firmly compressing the uterine body is to bend the fingers of the left hand into the palm, and grasp the uterine body between the right hand on the abdominal wall and the firm resisting surface formed by the closed fingers and volar prominences of the left hand (Fig. 5). By this use of the hands the whole of the uterine body can be firmly compressed, and clots can be squeezed out through the

cervical canal, which is not blocked up as it is in Zweifel's method. It brings with it no risk of injury to the uterus, offers no increased facilities for the entry of germs, and secures the maintenance of one essential condition for permanent uterine retraction and contraction—viz., an empty uterus. The pressure need not be more forcible than is needed to press the uterine walls together. It is a little irksome to keep it up, but it can be maintained quite long enough for the blood in the vessels to clot. It is not more irksome than the repeated manipulations which other less certain modes of treatment involve and the anxious watching of their effect. When the uterus will not contract, the only thing that, in his opinion, can be relied on is the maintenance of firm compression. In almost all the cases he has read in which it is said that more was required, either pressure had not been tried or only tried after other ineffective measures had been practised. By "pressure" he means not simply kneading the uterus to make it contract, but firmly and continuously compressing the uterus, just as a surgeon would compress a vein wounded during an operation. This ought not to be postponed until the failure of attempts to get contraction has been repeatedly demonstrated; but as soon as ever it is clear that stimulation fails to produce contraction, or that the contraction produced by stimulation is not lasting, the uterus should be steadily compressed and pressure maintained until it can be relaxed without bleeding occurring. Early and steadily maintained compression of the uterus is the safest and best treatment of post-partum hæmorrhage.

[Since the publication of the above communication, the mode of compression recommended by Herman has been tried largely, and has met with great acceptance. It is undoubtedly the best means we possess of treating successfully severe and prolonged cases of bleeding after expulsion of the foetus and secundines.]

Berner (*Centralbl. f. Gyn.*, No. 29, 1893) reports a case of acute diffuse sublimate eczema in child-bed. The patient was a primipara, aged thirty-one; the labour was normal, the parts were repeatedly explored, and sublimate injections used in the customary way. On the second day, typical eczema appeared in the neighbourhood of the vulva. It gradually spread, until it invaded the whole body, and quickly disappeared. On the tenth day, free desquamation was observed. There had been but little fever; the highest temperature (101°) was reached on the tenth day. The left breast afterwards became inflamed and was punctured, and sublimate was again used. On the next day an eczematous rash appeared around the breast. It soon faded and did not spread. The history proves that the sublimate was the cause of

the eruption, an intolerance of the salt being an idiosyncrasy of the patient.

Möbius (*Münch. med. Woch.*, Nov. 8, 1892) records 2 cases of puerperal neuritis. (1) A woman aged twenty-nine had given birth to six children. The first two were alive, the third died after eight days, the fourth and fifth were born dead at the seventh month. The sixth child was found to be dead, and had to be mutilated before it could be delivered. Fever followed, apparently due to pelvic cellulitis. Three weeks later there was pain in the left calf, which passed off. In the ninth week the patient had curious sensations in the right forearm, and she could not write or use scissors. When seen by the author she had paralysis of the right flexor longus pollicis. This muscle showed the reaction of degeneration. No real improvement had as yet taken place under electrical treatment. (2) A woman aged fifty-five was found to have well-marked atrophy in the muscles supplied by the left ulnar nerve. Motion was not much interfered with, and the electric reactions were preserved. There was some hyperæsthesia in the same region. She gave a history of having, thirteen years previously, had fever after childbirth, and severe pains in the abdomen. Fourteen days later she had hyperæsthesia in the left ulnar region, and, later, pains in the arm. The left hand gradually became weak. In three or four weeks the pains ceased, but some weakness persisted.

Krönig (*Centralbl. f. Gyn.*, No. 8, 1893) has studied the development of gonococci in nine women after labour. The germs are easily found in the lochia. It is certain that in women with vaginal gonorrhœa the disease may extend into the uterus during the puerperium. Gonorrhœal infection of the uterine cavity may also set up fever even when there is no trace of mixed infection—no other germs being present. Gonorrhœal infection in the puerperium is not of direct danger to life, but frequently leads to complications late in the puerperium, the disease progressing from the endometrium to the tubes. Two cases of this kind are recorded. The first, after the usual careful routine treatment, left the hospital on the fourteenth day. Two weeks later she returned. A perimetric exudation was detected to the left of the cervix. The second case was graver. On the fourteenth day the temperature rose to over 103°, the right elbow became painful, and effusions into the extensor tendons of the right hand occurred. During the third week right parametritis set in, the temperature rising to 104°. Then the pain and parametric swelling subsided. The fluid from the teno-synovitis was sero-purulent, but free from germs.

VII.—THE INFANT.

1. Ophthalmia neonatorum.

Heelas (*Lancet*, April, 1893) calls attention to the excellent results to be obtained from the Cr  d   method for the prevention of ophthalmia in new-born infants, as exemplified in the following brief notes of an outbreak so cut short in the wards of the General Lying-in Hospital:—The method consists in dropping a 2 per cent. solution of nitrate of silver into the eyes immediately the head is born. Up to the time of the outbreak the usual method of treating the eyes in this hospital had consisted in wiping them with clean cotton-wool as soon as the head was born (the wool being immediately afterwards burnt). A few drops of perchloride of mercury solution (1 in 2,000) were dropped in each eye after birth, and this was repeated twice a day during the fourteen days the infant remained in the hospital, and every mother had a vaginal douche of Cond  y's Fluid (half an ounce to the pint of water) previously to delivery. At the end of last and at the commencement of this year numerous cases of ophthalmia occurred in the hospital, for which no cause could be found. From January 1st to 22nd, out of seventeen children born alive, seven were so affected—this being more than 42 per cent. On the latter date the Cr  d   method was put in force. Not one single case occurred afterwards. The treatment gives rise to inflammation of the conjunctiva with an abundant thin muco-purulent discharge, commencing a few hours after the application; in nearly every case, however, this completely subsides in from four to five days, when the eyes regain their normal appearance.

O. Feis, of the G  ttingen University Maternity (*Centralbl. f. Gyn.*, Nov. 12, 1892), publishes an important case where the child's eyes were infected, after the rupture of the membranes, by the exploring finger, which conveyed discharge from the vagina into the uterus. The patient was a widow, age thirty-five, in her twelfth labour. The process was lingering, and after rupture of the membranes, the presentation (vertex) was carefully determined. A greenish-yellow discharge came away on the obstetrician's finger; the vagina was at once washed out with carbolised water. Not till fifty-four hours after the rupture of the membranes was the child born. It had swollen lids, with a yellowish watery discharge. Cr  d  's treatment was at once adopted. The eyelids were wiped with a clean towel, and covered with ice-water compresses. The conjunctiv   were washed out

with a 2 per cent. boracic-acid solution. Free purulent discharge, full of gonococci, developed, but the corneæ were saved, and the disease was cured. Had the carbolised water been injected before the digital exploration, the infection might have been avoided. Feis refers to several other cases where, as in the above, delivery did not take place till one, two, or three days after the escape of the waters. In a case published by Nieden, the obstetrician broke the membranes himself, delivered, and attended at once to the child's eyes, as the four previous children had suffered from gonorrhœal ophthalmia. Twenty-four hours after birth the child showed signs of that complaint, but was promptly cured. Nieden believed that the liquor amnii had conveyed the infection. Owing to strict "Crédé treatment," not a single case of post-partum gonorrhœal ophthalmia has occurred during the past four years in the Göttingen Maternity.

2. *Tetanus neonatorum.*

Hastings Gilford (*Lancet*, Feb., 1893) records a case of tetanus neonatorum as follows. He says :—"On June 1st, 1892, I was called at six p.m. to attend an infant, four days old, which had been in a fit for two hours. On my arrival the child was in the following condition : During the spasms the whole body became rigid almost simultaneously ; but on being carefully watched, it was noticed that the contractions in some of the fits apparently started in the face, but spread over the body so rapidly that it was difficult to be certain of this point. The face was puckered into a grimace, deep transverse and vertical lines appeared on the forehead, the eyelids became tightly closed, and deep furrows ran from the alæ of the nose to the angles of the mouth ; while the mouth was sometimes pursed up almost into a whistling form, and at other times remained more widely open. Occasionally a species of risus sardonicus appeared, the jaw was rigidly closed, the sterno-mastoids stood out boldly, and the muscles of the back of the neck, of the back, and of the abdomen were all firmly contracted ; the arms were held down by the side, while the forearms, the thighs, and the legs were flexed at right angles ; the feet were in the position of equino-varus, the hands were in a line with the forearms, and the fingers were clenched. There was slight retraction of the head, but no opisthotonos. During the spasms the infant retained this position in whatever way it was held, whether it was lifted up by placing the hand under the back, or even by one of its hands. The muscles were not at their highest tension, for, even when the spasm was at its worst, if any particular muscle were touched it immediately started out from its fellows ; they showed extreme sensitiveness to stimulation,

for if a muscle were but blown upon by the breath it immediately contracted and brought on a general convulsion. During the contractions it seemed hardly possible to alter the position of a limb without breaking a bone. The duration of the spasms varied from fifteen to thirty seconds, and at that time returned at intervals of from ten to twenty seconds. During their occurrence the baby uttered a frequent and peculiar low and suppressed cry, which did not, however, convey the impression of pain; nor did it cry during the intervals between the contractions, but ceased immediately and composed itself to sleep as if tired with its struggles. The skin was of a sallow tint, but during the fits it became dusky purple in colour. The respirations were 80 per minute and very shallow. The intercostal muscles could be seen to contract irregularly at intervals, which were far more frequent than those of respiration. There was no evidence of spasm of the diaphragm, but this may have been due to the prevention of abdominal movement by the rigid condition of the muscles. The very imperfect respirations appeared to be brought about by occasional, more uniform, and longer contractions of the intercostal muscles, aided by stronger contractions of the accessory muscles of respiration. The respirations in the pauses between the spasms were 136 per minute and shallow. The heart-sounds were normal in character, and the pulse-beats were probably almost 200 per minute, and regular, but slowed down to 120 during the fits. The power of suction seemed gone, for the mother, before I came, had repeatedly tried to get the child to take either the bottle or the breast, but without success, though the milk given by me with a spoon was swallowed after being held in the mouth a few seconds, the face becoming livid in the process. On attempting to introduce medicine per rectum, it was immediately shot out, but a thermometer was retained in the same place without giving rise to continuous spasm. The temperature was 101°. The tongue was clean; there was no thrush nor vomiting. The bowels had been opened three or four times a day until the 30th, when they acted twice. Half a teaspoonful of castor-oil had been given in the evening, and was subsequently repeated, acting twice during the night and once in the morning. The motions were of a healthy bright-yellow colour, and contained a few small curds. The pupils were normal, both in size and reaction, and were not affected by the spasms. The left eye looked upwards and outwards during the rests, and returned to the usual position during a fit; but owing to the great difficulty in overcoming the spasm of the eyelids, only one observation was made of the condition of the eyes. The urine was apparently

normal in colour, and was passed freely into the diapers. The umbilicus was still raw over the greater part of its surface, the sore looked healthy, and there was no pus or offensive smell."

Escherich (*Wien. klin. Woch.*, Aug. 10, 1893) remarks that, although trismus neonatorum has been proved to be due to a local infection of the umbilical wound with the tetanus bacillus, yet this knowledge has not hitherto yielded any therapeutic results. He reports 4 cases treated with Tizzoni's antitoxin. The remains of the umbilical cord fell off on the sixth, third, fourth, and fourth days respectively. The incubation period lasted two, nine, seven, and one days, and the duration of the disease was two, five, twelve, and two days respectively. The third case recovered, but the others died. At the necropsies septic inflammation of the umbilical wound was found in all 3 cases, with peritonitis in 1 case and pneumonia in the other 2. All the cases had septic symptoms, but it could not be positively asserted what part sepsis played in the fatal event. In Cases 1 and 4 inoculations of mice with a bit of tissue taken from near the umbilicus produced typical tetanus, but in the other cases it was without result. In Case 4 the disease was exceptionally acute, so that any good result could hardly be expected; and in Case 1 the doses were far too small (0·015 by 2). There remain Cases 2 and 3, in which cure might have been expected, but in Case 2 the injections (0·25 by 2) were discontinued because the symptoms of septic pneumonia prevailed and those of tetanus subsided. In Case 3 the length of the incubation period and the early commencement of the disease permitted only a fatal issue to be expected; yet this case recovered. Here one injection (0·3) was given on the third day and two similar ones on the fourth day, and a sublimate dressing was applied to the wound. In the other cases thermo-cautery was also used. The author refers to the hitherto almost hopeless prognosis of this disease. Of course the value of this new treatment can only be proved by a number of cases, but it would appear that we are not far from being able to cure an infection especially severe or already very advanced.

Lefour (*Nouv. Arch. d'Obstét. et de Gynéc.*, March, 1893) relates the difficulties which he experienced in a case of hæmorrhage from the cord. The mother had borne five children to term. The first and second died of uncontrollable hæmorrhage, which took place at the level of every kind of ligature employed to check it. Endo-arteritis was detected in the cord. In March, 1892, she became pregnant again, and was delivered on December 18th very rapidly. The midwife applied a waxed thread and soon afterwards a rubber ligature. All went well till the fourth day, when

oozing was observed around the ligature groove. On the sixth day there was serious hæmorrhage. Lefour checked it by Émile Dubois's operation—that is, a pad of skin was formed to close in the umbilicus by means of hare-lip pins and an elastic ligature. One pin was passed horizontally through the skin immediately above the umbilicus and another below, whilst three more were passed vertically through the skin both above and below, bridging over the umbilicus. Thus a second umbilicus was formed. At the end of five days the strangulated tissues came away, leaving a raw surface 2 inches in diameter, reduced in a fortnight to the size of a lentil. No oozing occurred from this surface.

3. Effect of quinine on nursing.

Oui (*Arch. de Tocologie et de Gynéc.*, Dec., 1892) finds that when the mother or nurse takes quinine it has no ill effect on the child. The drug is certainly excreted with the milk, but in very small quantities. The quininised milk has absolutely no influence on the child. After a series of careful weighings and measurements it was found that the average was the same in children suckled for a given time by nurses who had taken quinine as in children whose nurses had not taken that drug. Hence a nurse or mother may safely take quinine. Burdel's theory that quinine is noxious to the child is incorrect, and the precautions which he recommends are therefore unnecessary.

DISEASES OF THE SKIN.

BY MALCOLM MORRIS, F.R.C.S.ED.,

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1. Thyroid extract in psoriasis and other skin affections.

At the meeting of the British Medical Association at Newcastle, **Byrom Bramwell** read a paper in the Dermatological Section embodying the results which he had obtained in some cases of psoriasis and other diseases of the skin by the internal administration of thyroid extract (*Brit. Med. Journal*, Oct. 28, 1893). He was led to try this method by observing the very definite effects on the nutrition of the skin produced by thyroid feeding in cases of myxœdema and sporadic cretinism. He gives a full report of 3 cases of psoriasis which he treated in this way. Case 1.—A girl aged eighteen, in whom the disease was of nine months' duration, and in whom, at the time of her admission to hospital, the eruption was almost universal. All the ordinary remedies had proved useless. A quarter of a raw thyroid gland, finely minced and concealed in rice-paper, was prescribed daily. Six days after the thyroid feeding was commenced a distinct change for the better was noted, and in less than a month the eruption had in great part disappeared. When discharged, four months after admission, the patient was, and for several weeks previously had been, "absolutely well, the scalp and skin being absolutely normal and healthy." When seen nearly two months after her discharge, slight recurrence had taken place. Case 2.—A woman aged thirty-eight, suffering from very severe psoriasis, which had commenced seven months previously. Five drops of Brady and Martin's thyroid extract daily were prescribed, and improvement was almost immediately observed, not only in the objective phenomena, but in the subjective symptoms. In a fortnight the dose of thyroid extract was increased to 10 drops. Profuse shedding of scales took place, and from this time forward the improvement was rapid and continuous. Two months after admission the patient was discharged "absolutely well, her skin being as soft and tender and delicate-looking as that of a young child." In

both these cases the patient was kept in bed during the first month of the treatment; no special diet was prescribed, no medicine was given internally, and no external application was applied locally. Two months after her discharge this patient was seen and was found to be "absolutely well, the skin being beautifully clear, soft, and normal in every part of the body." Case 3.—A woman aged fifty-seven suffered from psoriasis, which had lasted for six years and a half. Five-drop doses of thyroid extract were given daily, and six weeks after the commencement of the treatment the disease had almost disappeared. This patient was not confined to bed. After an interval of some six weeks it was found that the improvement had not continued as had been anticipated. The dose of thyroid extract was therefore increased to 20 drops per diem, but the remedy did not at this stage appear to have the same effect as it had at first. Byrom Bramwell has treated several other cases of slight psoriasis by the internal administration of thyroid extract. In one of these (in which the skin affection was associated with frequently recurring attacks of epilepsy) the remedy did not produce any beneficial effect; the patient had, however, been taking full doses of bromide of potassium during the whole course of the thyroid treatment. In another slight case the eruption, which had disappeared from time to time under the thyroid treatment, had more than once broken out again. In a case of very severe and diffuse psoriasis under Stocker (of Dundee), the thyroid extract seemed to do little or no good. Byrom Bramwell thinks the results which he has obtained warrant a further trial of the remedy, not only in psoriasis, but in other affections of the skin, and especially in exfoliative dermatitis. He has administered thyroid extract in one case of lupus and in one case of acute eczema, with the effect in the former of apparently bringing about distinct improvement, and in the latter of allaying irritation. In this case, however, the remedy was discontinued in a week, as the disease seemed to be subsiding under the influence of rest and the avoidance of external irritation.

Davies (*Brit. Journ. Dermat.*, Sept., 1893) has tried the same method of treatment in 4 cases of skin disease, using the tabloids of thyroid extract as prepared by Burroughs and Wellcome. Case 1.—A blacksmith aged thirty-two, suffering from ordinary psoriasis of a few weeks' standing, was put on one thyroid tabloid a day, with the result that steady improvement immediately set in, and in eight weeks the patient was cured. Case 2.—A lad aged sixteen, with well-marked psoriasis of three years' duration. He took one tabloid daily for three months, and at the date of report was practically cured. Case 3.—A woman aged

forty-three, presenting a universal xerodermatous condition which, on the extensor surface of the knees, passed into a marked condition of ichthyosis. The disease was congenital. She took one thyroid tablet daily, and within a month very marked improvement was visible. The patient almost entirely lost her xerodermatous condition, whilst the ichthyotic state disappeared. She stated that "pieces like small bricks" came off her knees. The perspiration became marked on the face and head. Case 4.—A woman aged fifty-nine had suffered from chronic eczema for twelve years. She had been under treatment a long time. Under the thyroid treatment she began to make rapid progress; the irritable, moist condition of the skin passed away, being replaced by delicate new tissue. Davies does not regard the thyroid extract as in any sense a specific, but he considers that it has a powerful effect in altering the condition of the skin for the better. He thinks it not improbable that his results might have been more marked if he had used larger doses of the remedy.

At a meeting of the Northumberland and Durham Medical Society on October 12 (*Brit. Med. Journal*, Oct. 28, 1893, p. 947), **Limont** showed a man aged fifty-five who had suffered from psoriasis for fifty years. When first seen all the limbs, trunk, face, and scalp were affected. He was put on 15 grains of thyroid powder, no external application being used. Within a week there was distinct improvement, and at the end of seven weeks the eruption had disappeared from the head, face, body, and arms; only slight traces were to be seen on the lower third of the legs and on the neck. The man said he was more free from disease than he had been for fifty years. **Limont** also showed a woman aged twenty-four who had suffered from psoriasis for sixteen years. The lesions were markedly gyrate in form, the epithelium forming laminae rather than scales, and the rings having a great tendency to crack transversely. She was treated with thyroid extract for a month without appreciable benefit.

Barclay, of Banff (*Brit. Med. Journal*, Nov. 4, 1893), has also used thyroid extract in cases of skin disease, including 4 of psoriasis, 1 of congenital sclerodermia, and 1 of dermatitis herpetiformis. The remedy was used in the form of tabloids. The cases of psoriasis all did well. The case of sclerodermia had at the date of the report been under treatment for three months, and the result was most satisfactory; small doses of the remedy had no effect in this case. In the case of dermatitis herpetiformis the treatment was useless. [This novel application of the thyroid treatment has been mentioned by Thibierge and one or two other foreign dermatologists, but I have not been able to find

any record of an actual trial of the method having yet been made abroad. In my own hands the treatment has not yet given results sufficiently definite to form the basis of a judgment as to its therapeutic value.]

2. Treatment of psoriasis.

In opening a discussion on the Etiology and Treatment of Psoriasis at the meeting of the British Medical Association at Newcastle, **Crocker** (*Brit. Med. Journal*, Oct. 28, 1893) said that on the whole he thought there was nothing unreasonable in supposing that the disease was the outcome of two factors, the primary lesion being vaso-motor, while parasitic infection was a secondary but necessary condition. Arsenic, which was harmful while the disease was acute, probably acted on the peripheral nerve-endings. Iodide in enormous doses was beneficial, probably owing to its diuretic action. Antimony, which was often given to robust persons or in hyperæmic cases, required careful watching. Where the kidneys were sound, turpentine was useful, and was not so likely to produce hæmaturia as was supposed; it probably acted on the psoriasis by contracting the vessels and reducing hyperæmia. He gave at first 10 minims in emulsion with gum acacia thrice a day; at the same time he ordered large quantities of barley-water to be taken to keep up the flow of urine. As to local measures, the most important were (a) thorough removal of scales; (b) thorough application of the selected remedy to each spot, the choice of the microbicide drug being governed by the amount of hyperæmia present; (c) if acute hyperæmia were present, it should be treated as any other dermatitis, and special remedies resorted to when it had subsided. In the course of the discussion **Mapother** said the parasitocidal power of mercury was acknowledged, and a good many cases of its usefulness by inunction or internally in psoriasis, pushed slowly to mercurialism, and continued after apparent cure, had been observed by himself and others. The lesser proportion of relapses than under other modes of treatment was most encouraging. **Abraham** was sceptical as to the value of arsenic; he relied chiefly on tar vigorously applied in ointment, lotions, and baths. **J. Roberts** spoke of the value of vapour baths in chronic cases followed by oleum deelinæ. He had observed good results from antimony combined with good doses of carbonate of ammonia. **Pringle** referred to the amenability of the disease to arsenic; and to large doses of iodide of potassium, which acted sometimes with marvellous success in cases of true neurotic asthma. **Norman Walker** said the iodide treatment was often not properly understood. A large dose in England meant 15 to 30 grains;

the dose of iodide recommended in psoriasis was 100 to 200 grains thrice a day. This would cost more than a poor patient could afford.

Stopford Taylor said arsenic was a valuable remedy in chronic psoriasis, but it aggravated acute cases. He had seen a recrudescence of the disease in a chronic case while the patient was taking liq. arsenicalis \mathfrak{m} xij three times a day. Acetate of potash (grs. xl) was as good or better than huge doses of iodide of potassium in acute psoriasis, and was free from the objections brought against the latter drug. For local treatment in acute cases nothing was so good as the ung. glyc. plumb. subacet. In subacute cases applications of zinc and oil of tar, followed by ung. picis. liq. 3 j, vaselini 3 vij, completed a cure. In chronic cases chrysophanic acid ointment was certainly the best remedy; but care should be taken in its use, lest the eruption be aggravated by too strong an application of the drug, and the case converted into one of dermatitis exfoliativa.

Cazeneuve and Rollet (*Lyon Méd.*, April 9, 1893), in view of the unsatisfactory results obtained by other drugs which have been used in the treatment of psoriasis, and especially of the drawbacks attending the use of chrysarobin and pyrogallic acid, have sought for a substance which should be neither toxic nor irritating, while possessing reducing and antiseptic properties. The anilide of gallic acid—which is known in the impure state in commerce under the name of gallol, and which, purified for medicinal use, they call *gallanol*—seems to them to fulfil the necessary theoretical conditions. They have used gallanol, in several cases of psoriasis and eczema, in the form of powder, pomade, and pigment. Gallanol powder is white and impalpable; in chronic “weeping” eczema it has a marked drying effect. A mixture of gallanol powder and talc causes no smarting, and the itching is very quickly relieved. The drug was also used in the form of a pomade with vaseline as the excipient in the proportions of $\frac{1}{30}$, $\frac{1}{10}$, and $\frac{1}{4}$; in this form the drug had a marked effect in several cases of psoriasis and eczema in which it was tried. The authors have also used it in obstinate case of eczema and psoriasis as a pigment composed of a mixture of gallanol and chloroform, or alcohol painted over the affected surfaces with a camel-hair brush, the parts being afterwards covered with a layer of traumaticin. In certain cases in which the lesions were red and painful the parts were painted with a mixture of traumaticin and gallanol. Gallanol is a reducing agent; it causes neither redness nor inflammation nor staining of the skin, and it can therefore be used on the face. Further advantages claimed for it are that it has no smell, and

that it does not stain linen. The authors believe that gallanol is destined to replace chrysarobin and pyrogalllic acid in dermatological practice, inasmuch as it has more than the therapeutic efficacy of these substances without their attendant drawbacks.

3. Treatment of lupus.

Tommasoli (*Rif. Med.*, Nos. 116, 117, 1893), encouraged by the results obtained by him by injections of serum in syphilis, was led to try the effect of similar treatment in lupus. He used dog's serum for the purpose, on account of the known germicidal power of that fluid as regards the tubercle bacillus. The blood was drawn from the animal's femoral artery with the strictest precautions to ensure absolute purity of the fluid. He reports 3 cases treated in this way, one of which is here summarised as a type of the others. The first patient treated was a girl aged seventeen, with two small patches of lupus on the face. On February 15, 1893, two injections of fresh serum were made into one of the patches with a Pravaz syringe, the needle being passed from the edge of the patch horizontally inwards, and as near to the surface as possible; about $\frac{1}{2}$ a cubic centimetre was injected. An injection of $\frac{2}{10}$ of a syringe-ful was also made into the other patch. Gauze steeped in serum was then applied to both the patches, and the whole covered with an impermeable layer of gauze. There was hardly any general reaction, and the temperature remained normal. At the points of injection, where some redness and œdema had shown themselves at the time of the operation, no change occurred, except that the surface was a little more doughy and the itching slightly more pronounced. On February 17 a further injection of $\frac{4}{10}$ of a syringe-ful of serum was made into one of the patches, the liquid being as far as possible diffused throughout the affected area; an injection of $\frac{2}{10}$ was also made into the other patch, the parts being then dressed as before. In the evening the itching increased, and an erythematous zone surrounded both patches. There were, however, no signs of general reaction, and the local phenomena soon subsided. Further injections were followed by redness, swelling, and exfoliation of fine, moist scales. At the end of the treatment the improvement was "obvious and unquestionable." All the recent nodules about the edges of the patches had disappeared, and the lesions had diminished considerably in size. The improvement was not maintained, however; for, a month later, Tommasoli was obliged to have recourse to scarification and strong applications of resorcin. It is even doubtful whether the slight amelioration which was observed was due to the injections of serum, for mercurial plaster and resorcin ointment were to some extent used at the same time. Tommasoli's

conclusions are as follows: (1) Fresh dog's serum injected into the skin in doses less than 1 cubic centimetre cause no general reaction, and only a slight local reaction characterised by pain, itching, and œdema, these effects varying in different patients, but never lasting long. (2) The effects of these injections made at intervals of about a week, while they caused considerable reduction of the lesions, are at most only temporarily beneficial.

Veiel (*Berlin. klin. Woch.*, Sept. 25, 1893), according to the situation and nature of the disease, begins with mechanical methods (scarification, scraping), or with chemical agents (caustic potash, lapis infernalis, vaseline containing 10 per cent. of pyrogallol), or with cauterisation (thermo-cautery, galvano-cautery). When pyrogallol is not used from the first, it is employed for the first dressing. A piece of lint spread with vaseline containing 10 per cent. of pyrogallol is applied to the affected part. This first dressing is left on for two days; subsequent ones are changed every twenty-four hours. In this way the nodules which escape in the first instance are destroyed. The surrounding sound skin must be protected by means of a plaster. After the fourth or fifth day the pyrogallol pomade begins to cause great pain, for the relief of which morphine injections are often required. The addition of cocaine to the pomade is insufficient for the purpose. The dressing must be changed as rapidly as possible, as exposure of the affected surface to the air always causes great pain. When pain begins to be complained of, a weaker pomade (2 per cent. of pyrogallol) must be used; in persons of delicate skin 1 or even 0.2 per cent. may be as much as can be borne. The application of this is followed by granulation, and a smooth, firm surface is formed. Under this treatment healing is slow, but the resulting cicatrix is smoother and less unsightly than that obtained by any other method. In parts where the appearance of the scar is of only secondary importance, Veiel uses grafting by Thiersch's method as soon as a smooth granulating surface is formed. The urine must be examined during the whole course of the treatment, and the first sign of albuminuria or hæmaturia must be the signal for the discontinuance of the pyrogallol. Veiel, however, has not seen any permanent injury to the kidney in any of the cases he has treated in the way described.

Hebra (*Intern. klin. Rundschau*, No. 39, 1892; *Brit. Journ. Dermat.*, Dec., 1892), in a further note on the treatment of lupus by thiosinamin (see "Year-Book of Treatment" for 1893, p. 389), says the application is not made at the seat of the disease. The substance is administered subcutaneously in an alcoholic solution, and its action is limited to the diseased area. As a rule, he

chooses the skin of the back between and below the shoulder-blades for the injection. A very fine needle is thrust into the muscles and the fluid injected gradually. The alcoholic solution causes slight smarting, which, however, does not last above a minute, and even then may be mitigated by pressure with the thumb, which disperses the injected fluid into the surrounding tissues. Absorption takes place quickly, and the patient after a few minutes perceives a garlic-like taste in his mouth. The reaction in the diseased area manifests itself only some hours later. It lasts several hours, and then gradually subsides. After a series of injections the reddened condition of the part persists for some days, even after cessation of the treatment. It is therefore advisable to wait ten days, until the irritation has passed off, in order to judge of its beneficial effects. The action of thiosinamin is most marked in scar-tissue, and in no other neoplastic formation is this change so striking. As regards the quantity, he has employed a 15 per cent. solution in alcohol. Before use, the solution should be filtered, in order to get rid of any mechanical impurities. At first an amount equal to two or three divisions of a Pravaz syringe—from .30 gramme to .45 gramme of thiosinamin (5 grains to about $7\frac{1}{2}$ grains)—was administered. This was done twice a week. The dose was well borne, and caused the patient no greater inconvenience than if distilled water had been injected. The intensity of the reaction varies inversely as the extent of the disease. If the diseased area is large, then the local reaction is less marked with the same amount of injection, and the smaller the patch of disease the more intense the reaction. Hence small doses should be given at first and continued when the area of disease is trifling, but increased when extensive. In lupus cases half a Pravaz syringe may be injected during the third week, and between the fourth and fifth week a syringe of the 15 per cent. alcoholic solution may be given. This is continued as long as the typical reaction follows. In one case it lasted from two to three months. Should toleration supervene, the injection may be stopped for two or three weeks, and when resumed the reaction takes place as formerly. In some cases $1\frac{1}{2}$ syringe of the 15 per cent. alcoholic solution, and even 2, were given at one time without any untoward symptom. The latter quantity was not exceeded, for the simple reason that it sufficed to produce a curative effect.

4. Treatment of lupus erythematosus.

Bulkley (*Amer. Journal Med. Sci.*, April, 1893; *Brit. Journ. Dermatol.*, Oct., 1893) claims to have had very successful results in the treatment of lupus erythematosus—in acute and severe as well as in chronic cases—from the internal administration of

phosphorus. In a very considerable number of cases he has seen the lesions "subside and entirely disappear under the treatment proposed," and in a number of instances the patients have been "under observation, in one way or another, for a length of time after treatment." The drug is administered in solution as follows :—

Phosphorus	...	...	...	...	grs. vi
Absolute alcohol	...	...	...	...	3 xxx

To be dissolved with the aid of heat and agitation and then mixed, while still warm, with the following mixture, also warm—

Glycerine	...	...	...	...	℥ ixss
Alcohol	..	..	..	...	℥ jss
Essence of peppermint	...	...	...	...	3 ss

Each drachm contains 1 grain of phosphorus.

This method of administration is, according to Bulkley, not accompanied by digestive or liver derangements as when given in a pill or in oily solutions. The dose is 15 drops in water (which should be added quickly and the dose taken at once, to prevent oxidation), three times a day after meals, and very gradually increased to 45 or even 60 drops, and continued until the lesions have disappeared and superficial cicatrization has taken place. If ill-effects should occur the phosphorus may be temporarily replaced by full doses of nitric acid, or acetate of potash and nux vomica, with advantage.

Gaucher (*Sem. Méd.*, Oct. 4, 1893) says the internal treatment of lupus erythematosus must have an etiological basis, and must therefore be analogous to that employed in tubercular lupus. Thus cod-liver oil, arsenic, the iodides, and ferruginous preparations are severally indicated according to the circumstances of the case. Particular attention must be paid to the prevention of indigestion, so as to prevent congestions of the face, which may aggravate the disease. Vaso-constrictor remedies, such as sulphate of quinine, digitalis, ergotine, hamamelis virginica, have not been very successful. Local treatment must be adapted to local circumstances.

5. Treatment of ringworm.

At the meeting of the British Medical Association at Newcastle, Colcott Fox (*Brit. Journ. Dermatol.*, Sept., 1893) opened a discussion on the treatment of Ringworm. His own plan of treatment was as follows: He proceeded at the outset, by the application of some simple parasiticide of moderate irritative qualities, to acquire as definite a knowledge as possible of the tenacity of the ringworm and of the reactive qualities of the scalp. The choice of an agent must be governed by various considerations, such as the age and sensitiveness of the child, his or her

social surroundings, the number of patches involved, and so on. Ringworm was a disease which could be cured in many cases in a reasonable time only by the prolonged attention of an expert. Such treatment would cure recent patches, but if the disease was tenacious, he increased the strength of the application until inflammatory results ensued. This inflammation should be localised as far as possible around the hair-follicles, and be sufficiently deep-seated to loosen the hairs. An eczema-like dermatitis was useless, and indeed only delayed proceedings; therefore he did not favour blistering. The red oxide of mercury was one of the best irritative applications, and in special cases a little blistering fluid or croton oil might be added. Strong oleate of copper or verdigris, or mercuric oleate ointment, was useful. Applications like those associated with the names of Coster and Toulmin-Smith acted by their irritative effects. Epilation was to be tried from time to time. Every hair extracted entire with its inner root-sheath meant a cured follicle. Inflammation short of that producing a crust was aimed at, but the formation of crust was an excellent aid to cure. Lastly, he spoke strongly in favour of the croton-oil treatment of obstinate patches, or for rapid results. He now never recommended the treatment for others to carry out, for a certain experience was absolutely necessary in order to avoid scarring. He had used it largely, and often in carefully selected cases, with brilliant results.

Brocq (*Rev. Gén. de Clin. et de Thér.*, Feb. 1, 1893) refers to Sabouraud's researches, by which he has shown that among the varieties of trichophyton which attack man, there are especially two that are the usual causes of ringworm. These are trichophyton microsporon, a fungus consisting of minute spores of about $3\ \mu$. in diameter, without visible mycelium, pressed close against each other and forming round the hairs a kind of irregular envelope; and t. macrosporon, a fungus with large spores, 7 or 8 μ . in diameter, refractive, contained in mycelium tubes, and easily seen on the hair. The former is found in nearly all cases of refractory ringworm, and is the most common form of parasite in the tinea tonsurans in children. The hairs are fine and atrophied; they break at some distance from the mouth of the follicle, and are therefore relatively long. The latter is present in about 35 per cent. of cases of ringworm of the scalp, tinea sycosis, and herpes circinatus; it is the fungus of the more curable forms of ringworm. The hairs are thick, broken, and very short. As regards treatment, when microscopic examination proves that the parasite is the t. macrosporon, and when the disease is in an early stage, an attempt may be made to treat it without epilation. The hair should be

cut as close as possible with curved scissors—not shaved, as this may give rise to secondary inoculations. The head is then well washed with hot water and soft soap, or salicylic or ichthyol soap. Fresh tincture of iodine, or, better still, Cutler's mixture (carbolic acid, chloral hydrate, and tincture of iodine, of each equal parts), should be painted over the affected parts every day so as to set up active irritation; the application should be made beyond the edges of the patches. If Cutler's mixture is too irritating, the amount of iodine is increased to 2, 3, or even 6 parts to 1 of carbolic acid and chloral hydrate. The scalp is covered every day with a thick layer of iodised vaseline (1 in 100), over which is laid a piece of thin linen, the whole being then kept in position with a bandage and hermetically covered with a cap. If the patches are very irritable, a pomade of sulphurated ichthyol (salicylic acid, $7\frac{1}{2}$ grains; ichthyol and sulphur, $\bar{a}\bar{a}$ 30 grains; pure vaseline, 5 ounces), or of chrysophanic acid (1 in 30, 1 in 20, or 1 in 10), according to the tolerance of the skin. If there is no marked improvement after one or two months, epilation must be had recourse to. This is necessary in all cases where the *t. microsporon* is present. The hairs should be pulled out for a distance of 6 to 8 millimètres around each patch; all scabs and epithelial *débris* should be removed from the surface, preferably by scraping with the curette after the parts have been rubbed with boricised vaseline or carbolised oil. Epilation may be performed by means of a heated iron, which is applied to the patch and quickly withdrawn, bringing away fragments of hairs which it would be impossible to remove with pincers. With this should be combined local treatment with chrysophanic acid, ichthyol, mercurial plasters, etc., the whole being afterwards hermetically sealed up as already described.

Butte (*Les Teignes*, Paris, 1893) recommends the following method of treating ringworm: In all cases where epilation is judged necessary, several layers of the following preparation should be spread over the patches of ringworm, extending at least one centimètre beyond the edge: \mathcal{R} Alcohol (95° C.), 12 grammes; metallic iodine, $\cdot 75$ centigramme. Dissolve and add collodion, 35 grammes; Venice turpentine, 1.50 gramme; castor oil, 2 grammes. The following is an alternative formula: \mathcal{R} Alcohol (95° C.), ether, $\bar{a}\bar{a}$ 5 grammes; metallic iodine, $\cdot 50$ centigramme; collodion, 30 grammes. This should be applied daily for four or five days, till a thick, closely adherent coating, free from cracks, is formed. In a fortnight the edge of the coating is raised, the hairs sticking to it are cut with scissors, and the whole pulled off with the fingers. That part of the coating which was in contact with the scalp is

found to be covered with little hairs sticking to it. The patch is then washed with solution of sublimate (1 in 500), and an ordinary dressing is applied. Sometimes a cure is effected without a second course of iodised collodion being necessary.

6. Treatment of pruritus and pruriginous affections of the skin.

Brocq (*Journal of Cut. and Gen.-Urin. Dis.*, June, 1893) refers to the very remarkable sedative effect on the itching and general nervous excitability in lichen planus produced by hot douches as used by Jacquet. Brocq has used the method in some 30 patients suffering from pruriginous skin affections with variable results. The method as practised by Jacquet consists in the application of a tepid douche at about 35° C. (Brocq uses it from 35° to 37°), without pressure, with the sprinkler or broken jet, directed on the vertebral column for four or five minutes. Having met with considerable difficulty in getting the douches properly applied, Brocq has attempted to replace them by lotions applied morning and evening during a period of time determined by the nature of the case and the condition of the subject. A large sponge wetted in a pail of hot water, kept at a temperature of 35° to 38° C., is passed for thirty seconds to three or four minutes over the vertebral column. The sponge is frequently wetted in order to keep up a uniform temperature. The method has the recommendation of extreme simplicity, and has proved of service in some cases of general nervous excitability with intense pruritus; but Brocq acknowledges that it is decidedly inferior to the hot douche. As regards the latter, the susceptibility of the patient should always be tested to ascertain the temperature and the duration of the douche which suits him. Some require water at 34°, others at 35°, 36°, or 37° C. Some are soothed by a douche of one minute, but are fatigued and made uncomfortable by one of two or three minutes. Others, again, require douches of four, five, and even six minutes, repeated twice a day. Brocq has had most satisfactory results with hot douches in certain cases of rebellious pruritus ani, and in cases of generalised pruritus, prurigo, etc. He has completely failed in cases of pruriginous eruptions of an accentuated inflammatory type, in neuropathic subjects presenting acute skin eruptions under the form of itching eczema or multiple acuminate papules approaching in aspect Unna's lichen ruber neuroticus. He has obtained no marked effect in certain cases of localised rebellious pruritus or in the generalised form seemingly in relation with marked dryness of the skin, and worse in winter. The method deserves a trial "in many dermatoses of itching nature in neurotic individuals, and in particular where nervous excitability is excessive, and

where the pruritus manifests itself on the skin by urticaria papules of prurigo and circumscribed or diffuse lichenification."

Bronson (*New York Med. Rec.*, Oct. 14, 1893) has employed the following "anti-pruritic oil" largely for years, both in the local and in the so-called universal forms of the disease, with no more untoward results than now and then a trifling dermatitis from too frequent or too prolonged applications:—

R \bar{y}	Acid. carbolic.	...	...	...	...	3j—ij
	Liq. potass....	...	...	...	...	5j
	Ol. lini	...	...	...	...	3j

M., Sig. : Shake before using.

To correct the disagreeable smell of the linseed a drop or two of oil of bergamot may be added. Salicylic acid and salol, though less energetic in their effects, act in the same way, though to a less extent. They may be used in combination with other drugs, or by themselves in oils or ointments, in alcohol or in superfatted soaps. Thymol is in certain cases an admirable anti-pruritic, but on account of its irritating effect it cannot be used where the skin is very sensitive. It is well combined with menthol in a 3 per cent. (of each) alcoholic solution. The corrosive chloride of mercury is an efficient anti-pruritic. Other sedatives are cyanide of potassium (3i, water Oi), chloroform (3i, glycerine 3ss, water 3viii), and camphor in combination either with an inert powder or with chloral, the mixture being properly diluted. Among other anti-pruritic remedies are hot water (to be effective, the temperature of the water should be over 100° F., or as hot as can be borne, and the application should be prolonged for several minutes) and electricity, whether in the form of galvanism or of faradism. In uncomplicated cases of senile pruritus faradism rarely fails to give relief if persisted in. It has seemed to Bronson that it was often effective when applied to the spine and not directly to the itching surface. It is best applied by means of a brush electrode. Menthol relieves itching chiefly, if not solely, by substituting an exaggerated temperature sense for the perturbed sense of contact. It may be employed in alcoholic solutions (3 v—x, in 3 i) or in ointment; it may advantageously be combined with thymol or salol.

7. Treatment of sycosis and folliculitis.

Mora (*Sem. Méd.*, No. 29, 1893) claims excellent results from the following method of treatment in sycosis: The patient cleanses the affected parts as often as possible with absolute alcohol—as a rule, two to three times a day, and always in the morning and evening. With a thoroughly sterilised needle he pricks the

pustules as soon as they form, then touching them with absolute alcohol, and afterwards applying a mixture of ol. cinnamom. (Ceylon) 4·0 and ol. amygd. dulc. 8·0—12·0. In order to diminish the smarting caused by this, boracic-acid solution should be applied. This method, according to the author, is prompt and certain. To prevent recurrence, it should be continued for a fortnight after the disappearance of the last red spot.

8. Treatment of rosacea.

Petrini (*Roumanie Méd.*, May, 1893) succeeded in curing rosacea in two young subjects, after all the usual remedies had failed, by painting the affected parts on three consecutive days with the following mixture: R Resorcin, 15 grains; ichthyol, 30 grains; collodion flex., $7\frac{1}{2}$ ounces. Pustules were cleared out by means of Vidal's scarifier. In five or six days the coating began to crack, and the process of separation was completed in two days more. The effect of the treatment was to diminish both the redness and the size of the nodules. The procedure was repeated a second and a third time, each series of applications lasting three days. A cure was effected in two to three weeks. The author lays stress on the importance of collodion as an excipient for the resorcin and the ichthyol; in one case he failed with ichthyol mixed with vaseline, though used for a long time.

9. Alumnol.

Heinz and Liebrecht (*Berlin. klin. Woch.*, 1892, No. 48) describe, under the name of "alumnol," a naphthol sulphonic-acid salt of aluminium which is presented as a substance having astringent as well as antiseptic properties. It contains 5 per cent. of aluminium and 15 per cent. of sulphur. It is a fine white powder, soluble in water and glycerine, slightly soluble in alcohol, insoluble in ether. A 1 per cent. solution kills bacilli and spores in twenty-four hours; but 0·01 per cent. solutions check the growth of cultures of pathogenic bacteria. Even so diluted as 0·0025 to 0·005 per cent. alumnol had an astringent action sufficient to cause contraction of bloodvessels (in the frog's mesentery). The effect of the drug is not limited to the surface of the tissue to which it is applied, but penetrates to the deeper parts. Taken internally, either pure or in 10 to 20 per cent. solutions, it sets up violent diarrhoea. As a lotion it should be used in 0·5 to 0·2 per cent. solutions. Applied to discharging surfaces it quickly stops suppuration. In torpid ulcers of the thigh, alumnol in strong solutions and ointments (3—6 per cent.) gave very satisfactory results.

Chotzen (*Berlin. klin. Woch.*, No. 48, 1892; *Brit. Journ. Dermat.*, Aug., 1893) recommends the following methods of

applying alumnol: (1) *Pure alumnol*, for chancroids, erosions, and abscesses. (2) *Alumnol dusting powder*, 10—20 per cent., with equal parts of talc and starch, for balanitis, weeping eczema, and burns of the first degree. (3) *Alumnol solutions*, 1—5 per cent., for copiously discharging eczema, pustular eczema, facial acne, furunculosis, glandular swellings, and urethral discharges, whether due to the gonococcus or not. (4) *Alumnol spirit*, $2\frac{1}{2}$ per cent., for the after-treatment of eczema, post-scabetic dermatitis, urticaria, sycosis, and psoriasis of the scalp or face. After evaporation of the alcohol, rendered bluish by the alumnol, a white precipitate remains, giving the appearance of powdering. (5) *Alumnol-lanolin ointment*, $2\frac{1}{2}$ —5 or 10—20 per cent.

W. S. Gottheil, of New York (*New York Med. Journal*, Nov. 4, 1893), has tried alumnol in over 60 cases of skin diseases and venereal affections. He used it in the following forms: (1) *Alumnol powder No. 1*, 12 per cent.—℞ Alumnol, 20 grains; starch, 2·3 drachms; talc, 2·3 drachms. (2) *Alumnol powder No. 2*, 25 per cent.—℞ Alumnol, starch, and talc, of each 3·2 drachms. (3) *Alumnol collodion No. 1*.—℞ Alumnol, 4 parts; castor oil, 5 parts; collodion, 40 parts. (4) *Alumnol collodion No. 2*.—℞ Alumnol, 2 parts; castor oil, 6 parts; collodion, 40 parts. (5) *Alumnol ointment No. 1*, 1 per cent.—℞ Alumnol, 3·2 drachms; lard, 8 ounces. (6) *Alumnol ointment No. 2*, 5 per cent.—℞ Alumnol, 3·4 drachms; lard, 8 ounces. (7) *Alumnol ointment No. 3*, 12·5 per cent.—℞ Alumnol, 1 ounce; lard, 8 ounces. The remedy thus used gave results that were in some cases satisfactory and even brilliant. In others its effect was only moderately good, and in a few the author was unable to record any success at all.

10. Emol.

At the meeting of the British Medical Association at Newcastle, **Allan Jamieson** (*Brit. Journ. Dermat.*, Sept., 1893) read a note on a new therapeutic substance which he proposed to call "emol." Emol is a soft, impalpable powder of a delicate pink hue. According to **Readman, F.C.S.**, it is analogous to Fuller's earth, differing, however, from the varieties usually met with in the market. It contains, among other ingredients, steatite, to the presence of which some of its characters may be due. Added to hard water, it possesses a remarkable power of softening it. Used with warm water it acts as a sort of natural soap, readily and pleasantly cleansing the skin. Used as a paste with water, and applied—covered with some impermeable material, such as oiled silk or gutta-percha tissue—continuously for some time, it macerates and causes to separate painlessly those accumulations of hard thickened epidermis met with in eczema and in keratosis of the palms and

soles, though its use must be supplemented by the subsequent application to the resulting smooth, soft surface of unguentum vaselini plumbicum, or of glycerine of starch containing resorcin. Emol is an excellent and harmless dusting powder, more agreeable in appearance and more effectual than many.

11. Europhen.

Julius Goldschmidt, of Madeira (*Therap. Monatsh.*, April, 1893; *Brit. Journ. Dermat.*, Aug., 1893), reports 5 cases of leprosy treated with subcutaneous injections or inunctions of a 5 per cent. europhen solution in oil. The result in 4 cases was negative, but in the fifth remarkable improvement—if not actual cure—was obtained after fifteen months' treatment. Notable improvement was observed four weeks after the beginning of the treatment, which consisted in the gentle inunction of the solution into the infiltrated parts three times daily. Goldschmidt selected europhen as a remedy containing iodine easily set free, and suggests that possibly other iodine compounds may prove equally efficacious.

12. Tumenol.

G. H. Fox (*Trans. Amer. Dermatol. Assoc.*, New York, 1893, p. 105), in a report presented to the New York Dermatological Association, states that tumenol was used in acute and chronic eczema with the most satisfactory results; good effects were also observed in psoriasis. It at once allays the itching in eczema. On infiltrations it seems to act like tar, without the irritating qualities of that substance. Tumenol is a hard, resinous, bituminous substance, soluble in ether, and to a certain extent in hot water. The best preparation was an oil, which could be used pure or mixed into an ointment; or the substance itself is softened by heat and then mixed with ointments. Like ichthyol, it can be easily washed off with soap and water. Tumenol is expensive, but it is needed only in small quantity.

DISEASES OF THE EYE.

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No very striking advance has been made this year in the department of ophthalmology, but numerous excellent papers on special subjects have appeared in the various journals devoted to the diseases of the eyes, and much attention has been given to their pathology.

1. Chlorhydrate of scopolamine.

A new mydriatic. — Rählmann (*Klin. Monatsblätter für Augenheilkunde*, 1893, Feb., p. 50) gives an account of the chlorhydrate of scopolamine. Scopolamine is an alkaloid extracted from the root of *scopolia atropoides*. It is a tropeine and a mydriatic, but its composition is entirely different from that of atropine and hyoscyne; it appears to be isomeric with cocaine. Its action on the brain is paralysing, according to Kobert, in opposition to that of atropine. Rählmann considers scopolamine to be superior in practice to the other tropeines in use, including atropine. It has the advantages without having the drawbacks of hyoscyne. It may be employed for a long time without risk of any general toxic effects like those produced by atropine, such as dryness of the throat, loss of appetite, and nervous excitement. Its local antiphlogistic action is at least equal to that of atropine, and is even superior to it in cases of suppurative keratitis. It does not affect the tension of the globe, so that it may be used without fear of inducing a glaucomatous attack. Rählmann has even employed it with success to quiet an eye afflicted with glaucoma absolutum with ciliary irritation. It may be employed of a strength of about 1 or 2 parts in 1,000, its action being five times stronger than that of atropine.

2. Formic aldehyde.

A new antiseptic. — Valude (*Ann. d'Oculist.*, July, 1893) who, three years ago, wrote an article in the *Archives d'Ophthalmologie*, strongly supporting the claims of corrosive sublimate to be the best antiseptic, now brings forward another agent, and points out that different antiseptics may, in certain circumstances, possess a different value and importance. Thus, for example, whilst the perchloride of mercury is decidedly superior to the aniline dyes as

an antiseptic, it is, under certain conditions, owing to its small diffusibility, inferior to them. He considers that antiseptics act in two ways that should not be confounded : first, by a microbicide or antiseptic action properly so called, by which the existing microbes are killed ; and, secondly, by a sterilising or aseptic action which arrests the germination of the microbes. In clinical researches the former action has received attention, to the exclusion of the latter. Formic aldehyde CH_3O may be considered as formic acid minus one equivalent of water. It is obtained by spraying red-hot animal charcoal with methylic alcohol, and is easy to prepare. It is a colourless mobile liquid with the odour of formic acid, and with strong affinity for water, with which it mixes freely. It does not coagulate albumen. It is hence endowed with great diffusibility. It does not undergo change when kept in stoppered bottles. It possesses powerful aseptic properties ; thus, the introduction of 16 milligrammes of formic aldehyde into a litre of broth prevents the growth of microbes, whilst it requires 40 milligrammes of perchloride of mercury to bring about the same result. Its vapour even is antiseptic, meat under a glass cover, with a few drops of the aldehyde, undergoing no change ; but, though twice as powerful as the sublimate in preventing the germination of microbes, it is much less potent in killing those that have already appeared. He thinks, therefore, that both the sublimate and formic aldehyde may be advantageously employed in practice ; the former killing the microbes, but having only a superficial and temporary action, whilst the other has a more deep and penetrating sterilising power.

3. Tamaquary oil in affections of the cornea.

M. Mello Vianna (*Ann. d'Oculist.*, Jan., 1893) has studied with great care the chemical composition, pharmacology and physiological properties of the oil of tamaquary, which was used for the first time by Moura Brazil in 1883. The tree from which the oil is obtained is a native of the Province of the Amazons, and belongs to the Ternströmiaceæ, to which also the tea plant belongs. Vianna has employed the oil in all kinds of corneal affections, and the results he has obtained seem to render it an interesting subject for further inquiry. All forms of keratitis, except, perhaps, interstitial keratitis, may be successfully treated by it, but that form in which it is most efficacious is phlyctenular keratitis. It was successful in 68 cases of this disease that fell under his care. He uses it in the proportion of 1 part of oil of tamaquary to 25 parts of vaseline, the mixture being applied to the cornea directly with a small brush in small quantity, and gentle friction should be

applied to the lid ; general treatment should, of course, not be neglected.

4. Trachoma.

"The Nature of Trachoma" is the title of an essay by Jules Muttermilch (*Ann. d'Oculist.*, Jan., 1893), who dwells on the great differences of opinion that are held even by experts on this point. Some diagnose trachoma from the presence of a single follicle on the conjunctiva ; others require the formation of follicles on the tarsal conjunctiva ; others, again, believe the cicatrices to be the only sure evidence. Great differences again exist in regard to the ætiology of the disease. Some, the dualists, consider trachoma to be a special disease, developing under the influence of a peculiar parasite, and having nothing to do with follicular conjunctivitis ; others consider it to be only a sequela of follicular conjunctivitis ; others regard it as only a stage consecutive upon this disease ; and still there are some who see trachoma in almost every form of chronic conjunctivitis, but there is a general consensus of opinion in regard to its chronicity, its infectious origin, its contagiousness and disposition to assume an endemic character, and, lastly, its gravity, since serious complications, implicating the cornea, are apt to be provoked by it. If, however, simple facts are regarded, M. Muttermilch contends that the several forms pass into one another, that the follicle is in every instance the result of lymphoid infiltration into the subepithelial adenoid tissue, and that as migration of the lymphoid elements may be induced by many different agents, the follicle may accompany all the inflammatory affections of the conjunctiva, such, for example, as those engendered by dust, smoke, irritating vapours, and, providing they act for a sufficient length of time, even by the instillation of solutions of eserine and atropine. This writer is, therefore, a unicist, and is strongly opposed to the idea of the existence of a microbe of trachoma, which he thinks is non-existent. He points out that throughout the body a relation exists between the epithelium and the subepithelial tissue, so that epidermoid epithelium is never found on adenoid tissue ; and conversely, compact connective tissue is never found forming a base for mucous or columnar epithelium. It is owing to the adenoid tissue that the epithelial elements of mucous membranes regenerate themselves so rapidly, which renewal is, in itself, the cause of the resistance of the normal conjunctival epithelium to pernicious agents. It is obvious that these views, if correct, will have an important bearing on treatment.

5. Eczema of the lids.

Trousseau (*Rec. d'Ophthalmol.*, May, 1893, p. 269) gives the details of several cases of eczema of the lids with a mode of treatment

which has proved successful in his hands. In this disease the lids are swollen, hard, and painful, are opened with difficulty, and the patient is unceasingly tormented with a sensation of heat and tension, causing insupportable discomfort, preventing sleep, and leading him to scratch and rub the skin, thereby augmenting the inflammation and perpetuating the disease. The eczematous affection is not confined to the lids, but extends to the face and neck, as well as to the hairy scalp, giving a most unpleasant aspect to the face. Conjunctivitis with catarrhal secretion is always present, and adds to the palpebral trouble. After trying various methods of treatment, as poultices, solutions of boric acid, bicarbonate of soda and resorcin, he at last applied antiseptic treatment in the form of solutions of corrosive sublimate, and immediately noticed that the symptoms were alleviated. Beginning with solutions of feeble strength, he gradually used stronger ones, till with 1 part of the salt to 4,000 of water he found that in eight cases he obtained excellent results. If the eczematous surface was very irritable, the antiseptic treatment was applied during the day, and at night a cataplasm of rice-starch rendered aseptic was used. When the eczematous surface was very moist antiseptics was used during the day, and at night it was powdered with bismuth, oxide of zinc, or boric acid. If fissures were present they were touched with a three per cent. solution of silver nitrate. If the local discomfort was very great, compresses of water with varying proportions of alcohol were applied to the lids, and they were sprayed with carbolised water of half per cent. strength. Ointments should, he thinks, only be employed in the later stages.

6. Cataract.

The advantages of extraction of cataract without iridectomy is the title of a paper read by Galezowski before the Congress of Ophthalmology at Paris in May, 1893 (*Rec. d'Ophtal.*, May, 1893, p. 255). The author states that he has performed 1,934 operations with semi-elliptic flap, of which 1,599 were done without iridectomy. Of these 1,892 were complete successes; 368 required needling. He claims for this operation the preservation of a circular and active pupil; less dazzling from the admission of light; less magnifying power in the glasses required to the extent of 1 to 2 diopters, so that 7 or 8 diopters only are required, whilst if iridectomy have been performed 10 to 11 diopters are requisite. Moreover, the operation itself is calculated to facilitate the delivery of the lens, and to prevent the escape of the vitreous.

7. Extraction of cataract.

An occasional inconvenience of the operation of extraction of

cataract without the performance of iridectomy is that the iris prolapses. **Parinaud** (*Soc. d'Ophtal. de Paris*, Séance du 11 April, 1893) made this accident a subject of a discussion which is reported in the *Rec. d'Ophtal.*, April, 1893. He divided the periods when prolapse is likely to occur into two, primary and secondary; the former occurring immediately after the section has been made, the latter at a later period when the anterior chamber has been re-formed. Immediate or primary prolapse was almost certain to occur with the large peripheric section of Von Gräfe, but is much less frequent when the section is carried through the transparent portion of the cornea at some distance from the periphery, as is now usually done. With Von Gräfe's section iridectomy was a necessity, but it is not a necessity with the modern method of section. Parinaud is a disbeliever in the statement generally made when prolapse occurs that "the patient struck his eye," and noticed that the accident was most frequent in those cases where the manual parts of the operation had been most perfect, the cut the cleanest, the coaptation of the edges the most exact. Reflecting on the subject, it occurred to him that the prolapse was due to the rapid refilling of the anterior chamber before the edges of the wound had become firmly united. Hence he drew the conclusion that if the reunion of the wound could be postponed till the third day, prolapse of the iris would seldom occur. This rather extraordinary proposition he endeavours to render practical, not by opening the wound with a probe at each dressing, which might easily cause the prolapse that it is so desirable to prevent, but by the particular mode in which the section of the cornea is made. His description of the proceeding is that the puncture and counter-puncture are made in the horizontal diameter of the cornea just within the transparent portion. The first part of the cut is made as if a large flap were about to be made, but when the knife has nearly reached the periphery, the blade is rotated 90°, and the section is completed directly outwards. Looked at in section the form of the section is trapezoidal, but seen laterally it presents two lines meeting at a right angle. He, like Knapp and Chisolm, departs from the traditional need for repose after the operation, and allows his patients to walk about, and applies no bandages for the first day or two, and only insists on quiescence when the anterior chamber has re-formed. Before that has taken place, there is little danger of prolapse, but as soon as the iris is fairly separated from the cornea, and the aqueous has been re-secreted, there is some risk of its occurrence.

It may be that a particular direction of the section favours or opposes prolapse, but we apprehend that the general principle of

permitting or promoting the drainage of the aqueous humour, and thus preserving a communication between the conjunctival fluids and the interior of the globe, will not meet with much favour from those who have large opportunities of operating. With such we think the perfect coaptation and the speedy reunion of the wound will always be a desideratum.

Chauvel, an army surgeon, who has practised in Algeria (Galezowski's *Rec. d'Ophthal.*, April, 1893), gives some details of comparatively few cases of cataract that have fallen under his notice. He remarks that, although in ordinary cases extraction without iridectomy appears to be a preferable mode of proceeding, he has not himself practised it, having always performed an iridectomy. He has had sad experience of the danger of operating where there is catarrh of the lachrymal passages. The indigenous population of Algeria are not good subjects for surgical proceedings. He finds that it is necessary to use chloroform, though, as they drink only water, they are easily rendered unconscious. He records the case of a sergeant who received a blow on the left eye from a stream of water issuing from a fire-engine. Vision was instantly lost, the iris quivered, and the lens, though it was not displaced from the pupil, oscillated with every movement of the eye, and, which is the point of interest, became in the course of twenty-four hours opaque.

8. Extraction of the lens in myopia.

At a meeting of the Medical Society of Berlin **Schweigger** (Séance du 26 Avril, *Ann. d'Oculist.*, Mai, 1893) states that since Nov., 1890, he has operated on 15 cases of high myopia by the extraction of the lens without iridectomy. The age of his patients varied from nine to thirty-four years, and twelve of them were females, and in all the myopia was a congenital defect in the usual sense of the term, for myopia has not been hitherto observed in a new-born child. These are always hypermetropic or emmetropic. Myopia only commences after the second year. The degree of myopia present was on the average 15 or 16 diopters. After the extraction of the lens the patients became emmetropic, or still preserved a slight degree of myopia, which it was easy to correct. One eye only was operated on, but in each case he satisfied himself before operating that the vision was good.

9. Pterygion and cataract operation.

A. Trousseau (*Ann. d'Oculist.*, T. cix., Jan., 1893, p. 47) observes that since Poucet, of Clugny, found numerous sporules and vibrios at the apex of pterygia, many authors have jumped to the conclusion that in such a complication the operation for

cataract extraction should not be undertaken lest the cornea should be infected, or even suppuration of the eye take place. Noyes, for example, recommends that in the event of a pterygion being present, the pterygion should be first removed and then the operation for cataract may be proceeded with. Trousseau is opposed to this view. He thinks the septicity of pterygion is unproven. Three years ago he performed, at the Hôpital Quinze Vingts, an operation for cataract on a woman afflicted with an extensive pterygion. It proved successful, and since that time—though he has repeated the operation several times on other patients—he has no bad results.

10. Sympathetic ophthalmia.

Baquis (*Ann. de Ottalmol.*, xxi., p. 300) records a case of sympathetic ophthalmia in which he adopted, with success, the plan of treatment suggested by Abadie, of injecting into the damaged eye two drops of a $\frac{1}{1500}$ solution of perchloride of mercury. The second eye was observed to have undergone improvement on the next day. The injection was repeated a week later, after which all signs of irritation disappeared from both eyes. The injured eye began to atrophy, but remained free from pain and irritation.

11. A new photometer.

Prince, of Springfield, Ill. (*Arch. of Ophthal.*, July, 1893) describes an instrument for determining rapidly the kind and degree of deviation of the eyes. It consists of two 2-degree prisms combined with a Maddox rod. The prisms are set in revolving rings, which can be rotated by a thumb-screw. When so revolved that the base of one is opposite the apex of the other, they neutralise each other. When the bases are opposite, a total strength of 4° is realised. The Maddox rod is placed at the back of the prisms so that they rotate in front of it. When the instrument is placed before the patient's right eye with the Maddox rod vertical, the image of a small gas-jet viewed against a dark background, at a distance of fifteen feet, will be distorted into a horizontal band of light. If an error of less than 4° exist, rotation of the thumb-screw will effect a superposition of the images, an index on a dial pointing to right or left hyperphoria or the existence of neither. If the prism required to bring the images together be more than 4°, additional prisms can be placed in a trial cell. Prince believes his instrument combines many advantages over other means.

12. Strabismus.

Grandclément in a paper read before the Société Française d'Ophthalmologie (*Archiv. d'Ophthal.*, June, 1893, p. 389) proposes a method of treating strabismus, which he believes to be a

simplification of the ordinary operation for advancement of the tendon. It consists, in cases of external squint, of dividing the tendon of the external rectus. Then taking up a fold of the conjunctiva and subconjunctival tissue at the inner part of the globe, and transfixing it in two places with a pair of needles on one thread, he ties the two extremities of the thread just in front of the plica semilunaris. The thread is cut out after a fortnight, and leaves two cicatricial bands which keep the eye in position.

13. Operative treatment in strabismus.

A. Bourgeois (*Rec. d'Ophtal.*, April, 1893) remarks that many parents cannot decide whether they will or will not submit a child with strabismus to operation owing to a widely spread prejudice which the ophthalmologist should endeavour to remove. He should point out to those interested that squint which has long existed never recovers; that exercises with correcting glasses or with various appliances, very rarely succeed by themselves, whilst they are of considerable utility when the operation has been performed; that in the majority of cases the operation succeeds—if not completely, at least to a considerable extent; that it is not painful under cocaine, and is harmless; and that in fine the patient has everything to gain and nothing to lose. The operation ought to be performed, he thinks, preferably at the age of six to eight. Certain cases cure themselves, but it is not possible to say which, nor how long they will last in childhood.

14. Treatment of syphilis by means of mercury succinide.

Arnaud (Galezowski's *Rec.*, Dec., 1892) recommends the employment—by means of hypodermic injections—of the succinide of mercury. The solution should contain two parts of the salt in 1000 of distilled water. The succinide should be that obtained by the action of pure ammonia on succinic anhydride. This salt occasions neither abscess nor pain nor inflammation. It is absorbed with rapidity. Arnaud has made some investigations as to the time occupied in the elimination of mercury according to the mode in which it is administered. He finds that the metal is found in the urine when it has been taken in the form of pill two or three days subsequently to its ingestion, whilst it appears in the course of five or six hours when it has been subcutaneously injected. Welander states that he has discovered it in the urine as early as one hour after the first injection of formamide of mercury.

15. Syphilitic retinitis.

The treatment of syphilitic retinitis is discussed by F. Boé,

apropos of a case in which this disease existed. As a result of syphilis occurring eight years previously, vision became impaired rather suddenly. The refraction of the right eye was emmetropic, and the vision normal; that of the left was reduced to $\frac{6}{18}$ th; both discs presented optic neuritis, but the fundus appeared to be healthy in each eye. $15\frac{1}{2}$ grains of potassium iodide were prescribed daily for eight days, at the end of which time the vision in the right eye was reduced like that of the left to $\frac{1}{3}$ rd of the normal; 60 grains were now administered, and the vision deteriorated. Mercurial inunction was then ordered. In ten days the vision of the right eye was again perfect. About a month afterwards he received a blow, which was, however, not severe, on the right eye. The vision was temporarily impaired, but in the course of three days was again perfect. He holds strongly with Förster, that mercurial inunction is the proper mode of treatment for syphilitic retinitis; nevertheless, if this plan be pushed too far when atrophy has commenced, the disease may be augmented in activity, so that great precaution should be used in stopping it at the right moment. He gives another case in which neither the iodide nor mercurial inunction had any influence in arresting the progress of the failure of vision, but it was at once held in check by lactate of zinc.

16. Night-blindness and hemeralopia.

The subject of epidemic night-blindness or hemeralopia has been discussed in an able paper by O. Walter (*Archiv für Augenheilk.*, bd. xxvii., heft. i. and ii., 1893). Two forms of night-blindness are generally admitted, one of which is symptomatic of disease of the retina and of the optic nerve, whilst the other is genuine, essential, or idiopathic. The nature of the latter form, and the cause of its occurrence, are at present very obscure. It sometimes is only met with in sporadic cases, whilst at other times it is frequent, assuming at certain periods of the year, and in some districts, quite an epidemic character. Walter has studied the affection in the Ural region of Russia, where it is relatively common, and is of real importance to a large number of artisans, because it leads to a shortening of the hours of labour. Prof. Adamük has suggested that it may be of miasmatic origin. Kubli, on the other hand, who has also had large experience of it, believes it to be due to excessive muscular fatigue, cold, and insufficient diet. The number of cases seen by Walter is very remarkable, considering the small number of ophthalmic patients under his care, for these did not exceed 1,248 in the year 1891, yet the proportion of cases of night-blindness was no

less than 7·5 per cent., or 1 in 13. It is most common in males, the proportion to females being as 2, or even 2·75 to 1. It is rather more common in youth than in age, but may occur at any period of life. It undoubtedly increases in frequency towards the close of, and after, the long fasts enjoined by the Church. The treatment recommended by Walter is simple, and, according to his statement, satisfactory. It should consist of strengthening remedies, with the administration of cod-liver oil, and, in severe cases, of strychnine.

17. Surgical treatment of detached retina.

In a paper read before the Société d'Ophthalmologie de Paris, **Abadie** (*Ann. d'Oculist.*, July, 1893) states that he long ago tried puncture of the sclerotic with the galvano-cautery, but found that whilst inflammatory foci of the choroid could in this way be easily produced, it was at the cost of lesions of the sclerotic, which were dangerous to sight. Intraocular injections with irritating collyria, like tincture of iodine, were occasionally advantageous, but in this case also there was risk of uncontrollable after-results. In seeking for other means, he has tried electrolysis, with which he has had much success. He has had some small styles made of iridised platinum, the extremity of which, to the extent of eight millimètres, is a double-edged knife, the remainder of the instrument being covered with gutta-percha, which forms a shoulder and prevents the point from being forced too far into the eye. In the case of myopic detachment he applies one or several Heurteloup's artificial leeches to the temple, then every other day he injects beneath the conjunctiva a drop of a solution of perchloride, containing one part to 1,000 of water, and a subcutaneous injection of pilocarpine. These measures alone often prove of great service. If the detachment is of choroidal origin he replaces the pilocarpine with the sublimate, and then has recourse to electrolysis. A large metal disc, covered with wet chamois skin, is applied to the arm of the patient, and connected with the negative pole of a continuous current; the pointed extremity of the other pole, terminating in iridised platinum, is made to penetrate the centre of the detachment a little behind the ciliary region. The current, which may attain the strength of nine or ten elements of Gaiffe, which amounts to about two or three milliampères, may be allowed to pass for about five minutes. The current is now reduced to zero, and the electrode is withdrawn. The next day a whitish spot can be seen at the point of puncture with the ophthalmoscope. A similar plan of treatment has been proposed by **M. Schöler**, of Berlin, who traverses the retinal bulla, and allows the electrode

to enter the vitreous humour. (See *Klinische Monatsblätter für Augenheilkunde*, June, 1893.)

18. Parallel between the ocular troubles in tabes, alcoholism, and hysteria.

In a clinical lecture on this subject (*Rec. d'Ophthal.*, Dec., 1892), Charcot pointed out that in tabes, ptosis and incoördination of the muscular movements, especially of the muscles supplied by the third nerve, were of frequent occurrence, though they were occasionally observed under other conditions. In alcoholism it is rare to find paralysis of single muscles, but when ophthalmoplegia is observed in alcoholism the state of the patient is serious, and is likely to terminate in death. If there be anything analogous to this in hysteria, such as spasmodic strabismus and ptosis, a condition to which Parinaud has given the name of pseudo-paralytic ptosis, it is due not to paralysis of the levator palpebræ but to spasm of the orbicularis. Diplopia and monocular polyopia are common in hysteria. The condition of the pupils affords important means of diagnosis. In the ataxic they are contracted and unequal in size, and the Argyll-Robertson sign is present. In alcoholism that sign is very rarely present, and the pupil usually responds to light. Again in tabes, as the optic atrophy advances the field of vision becomes irregularly contracted, and in regard to the colour sense the red and green are first lost, whilst the perception of blue and yellow remain intact until the field is irremediably lost. In hysteria the visual field is regularly and concentrically contracted; dyschromatopsia is not the rule, but when it does occur it is more frequent in the female. Moreover, the colours are lost in a different order, the violet being first lost, then the blue, and then the yellow. Red persists for a long time, and sometimes its extent is greater even than white. In alcoholism there is a central scotoma, in the area of which colour vision is lost, whilst it is retained in the periphery of the field. In regard to the fundus the disc is of a pearly-white colour in tabes. The contour is even, and the retinal vessels are unaffected, at least in the earlier periods. Blindness usually supervenes in the course of six years, and the progress of the disease cannot be arrested. One eye is, however, usually more severely affected than the other. In toxic amblyopia, on the other hand, the visual troubles appear simultaneously in the two eyes, and the scotoma is bilateral. The affection may exist for a long time before any change is recognisable by the ophthalmoscope. It first shows itself under the form of pallor of the temporal side of the papillæ. An important difference between tabetic and alcoholic amblyopia is that the former is incurable, whilst the patient may recover from

the latter. In hysteria blindness may be present, but no changes in the papillæ are visible, and complete recovery may take place.

19. Toric glasses for errors of refraction.

A. Steiger (*Zehender's klin. Monatsbl. für Augenheilk.*, 1893, p. 272) observes that the general definition of a torus is a surface having regular curvature, with two principal meridians of dissimilar curvature at right angles to each other. It is therefore possible to have a toric surface, one of the meridians of which presents a spherical curvature, whilst the other is a segment of an ellipse, or of a hyperbola, or of some other curve. It is obvious, he says, that in optics we can only utilise toric surfaces of which the two principal meridians have a spherical curvature, which restricts the definition given above. But in addition, all spectacle glasses have two surfaces, and we can imagine glasses which shall be toric on both surfaces (bitoric glasses), which might yet be destitute of all optical action. This occurs, for example, when the principal meridians of the two surfaces are parallel; and on the contrary, bitoric glasses might be obtained, the two surfaces of which presented curvatures capable of correcting mixed astigmatism. Between these two extremes toric glasses are found capable of being applied to the correction of astigmatism, whether simple or compound, myopic or hypermetropic. These glasses may be regarded as simple cylinders or spherico-cylindrical (concave or convex), that are moulded on a spherical surface, giving them the aspect of the menisci actually used in ophthalmology. The menisci thus obtained would only have a toric anterior surface, and would possess the known advantages of menisci or periscopic glasses. Taking into consideration all the cases which can occur in regard to the curvature of the two surfaces of menisci, we might offer the following classification of menisci:—

A. Menisci with two simply spherical surfaces (ordinary menisci)—

1. Neutral (preservers).
2. Positive.
3. Negative.

B. Menisci, sphero-toric or cylinders—

1. Positive (simple or sphero-cylinders).
2. Negative (simple or sphero-cylinders).

C. Menisci with inverse toric surfaces (or mixed cylinders).

D. Menisci with two toric surfaces in the same sense, or tori properly so called—

1. Neutral.
2. Positive.
3. Negative.

Of these different kinds of glasses Nos. 2 and 3 A, 2 B, and C, are alone capable of being used in ophthalmology.

Pfäuger (*Klinische Monatsbl. für Augenheilk.*, 1893, Jan., p. 1) also strongly recommends toric lenses for the correction of simple or compound astigmatism. He considers them to be very superior to cylindrical or sphero-cylindrical glasses. These glasses are manufactured at a reasonable price by the optician Strubin, of Bâle.

20. Asepsia in ophthalmic operations.

Nuel (*Arch. d'Ophtalmol.*, June, 1893, p. 363) read an elaborate paper before the French Society of Ophthalmology upon the subject of asepsia in ophthalmic operations, limiting his remarks to the operations which affect those refractive media of the eye that are least capable of resisting microbic infection—that is to say, to the crystalline lens and the vitreous humour. He commenced by drawing attention to the fact that conditions may exist in the immediate vicinity of microbes which are capable of diminishing, or altogether annulling, the action of an antiseptic. Thus in the case of the perchloride of mercury, an acid reaction is favourable to its microbicide action, whilst the alkaline reaction, which is characteristic of most of our fluids, is unfavourable; and the presence of hydrosulphuric acid absolutely destroys its influence. Moreover, small masses of albuminous substances and mucin, or fat, may include, and mechanically protect, microbes from the action of antiseptics. Thus a thread impregnated with the bacillus of blue pus (a microbe that has little power of resistance) and then coated with fat or gelatine, retains its septic power for one or for several days, even when immersed in a solution of the perchloride containing one part of the salt to 200 of water. And again, it is impossible to apply to the surface of any wound, or even to such a tissue as the conjunctiva, an antiseptic in a sufficiently concentrated state to kill all pathological microbes, for the antiseptic, if the solution be strong, excites the secretions of the part which furnishes pabulum for the multiplication of the microbes. Fortunately, most of the microbes met with in surgery, especially the white and yellow staphylococci, are endowed with little power of resistance to antiseptic agents, and especially to those of a chemical nature, whilst our tissues and humours themselves have properties opposed to the growth and multiplication of bacteria, phagocytosis apparently predominating in the tissues, and a chemical action in the case of the humours. Hence, as a rule, wounds heal readily, and bad results are only met with when the number of the micro-organisms is very great, or when the resisting power of the

and those of typhoid, pneumonia, glanders, diphtheria, and tuberculosis respectively at the same temperatures. The spores of anthrax, tuberculosis, typhoid fever, and malignant œdema require a temperature of 100° C. to kill them in ten minutes.

Stroschein (*v. Graf's Archiv.*, Bd. xxxix., Abtheil. 1, p. 256) has also devoted a long article to asepsis in ophthalmic surgery. He points out that various experiments have shown that as a rule few or no bacteria exist in the conjunctival sac, the tears being effective in washing them away; but in cases of lachrymal obstruction they are abundant, and the conjunctiva should be thoroughly cleansed before operation. He has made some interesting experiments on the sterilisation of instruments, and has shown that even in Graefe's knives fresh from the grinder nine out of twelve dipped into gelatine or agar-agar yielded colonies of microbes, of which some were *sarcina luteus*, others potato bacillus, others *mucor*, and others again unknown species. These very knives, however, after having been in use for a month, but undergoing frequent disinfection, were sterile. Five Beer's knives were tested, and only one was sterile; on the other hand, five bent needles were sterile. He purifies his knives by brushing the surface of the blade with a plug of cotton-wool dipped in a mixture of alcohol-ether with a few drops of ammonia. It is then rubbed with a plug of cotton-wool wetted with a 5 per cent. solution of carbolic acid, and finally this is washed off with sterilised physiological solution of common salt. Such knives were always free from infectious material.

DISEASES OF THE EAR.

BY GEORGE P. FIELD, M.R.C.S.,

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1. Eczema of the ear.

Chatellier (*Laryngological Society of Paris Transactions*, reported in *Journal of Laryngol., Rhinol., and Otol.*, Aug., 1893).—After an experience of six years, the remedy which has given greatest satisfaction is iodol in impalpable powder. The mode of use varies with the character and seat of the disease.

(1) *Moist eczema*.—The part is washed with a solution of corrosive sublimate (1 to 3,000 or 4,000), and dried with absorbent wool. It is then well sprinkled with iodol powder, with which the meatus is filled, and the whole is covered with absorbent wool. This is repeated night and morning till recovery, which usually takes place in from one to eight days.

(2) *Dry eczema*. (a) *On the auricle and neighbouring parts*.—The parts are washed, as in the other case, dried, and then covered with an ointment of one part of iodol to thirty of lanolin. It is well to cover them with a sheet of cotton-wool, and they should be dressed night and morning.

(b) *In the meatus*.—The meatus must be syringed out with the lotion as before, and dried with a pellet of cotton-wool. The head must then be bent over to the opposite side, and the meatus filled with a mixture of one part of iodol in thirty of paraffin oil, well shaken up. This should be retained by means of a plug of cotton-wool. This is repeated night and morning for a fortnight, when the eczema is cured.

2. Gangrene of both ears.

Lockwood (*Proceedings of the Medical Society of London*, reported in the *Lancet*, Feb. 4, 1893) showed a case in which the patches of gangrene were symmetrical and similar to those described by Raynaud. Sheild had found relief obtained from the local application of belladonna. Guthrie had seen remarkable benefit from the administration of trinitrine tabloids. Eddowes recommended removing the scab, applying an antiseptic plaster, and using gentle massage. Hutchinson had found the condition best relieved by small doses of opium.

3. Plastic operation for new auricle.

Randall (*Arch. of Otol.*, April, 1893) attempted to build up in two stages a new auricle to replace one that had been bitten off in early childhood. The first operation consisted in the formation of a small rudimentary pinna from the neighbouring skin; when this was quite healed it was split in half so as to double its extent of surface. A graft was then taken from a rabbit's ear by cutting out a circular piece, denuding the hairy surface, and applying this edge to edge to the new pinna. The graft took well, but gradually shrank, and did not leave much improvement on the first operation. The author hopes the attempt may furnish suggestions to others for more successful measures.

4. An apparatus of precision for inflating and medicating the tympanum.

Hubbard (*Arch. of Otol.*, Jan., 1893) describes and figures an apparatus for warming, cleansing, and medicating the air employed in politzerisation, which at the same time controls and records the degree of tension required for thorough inflation. The invention is the outcome of an assumption on the author's part "that the ordinary method of politzerisation is in its details unsurgical in so far as liability of introducing septic air dust into the middle-ear tract is concerned, and that it is highly important that the air should be non-irritant and thoroughly warmed." The recording of tension he also considers to add practical and scientific value to the method.

5. Improvement in bend of shaft of aural instruments.

Barclay (*Arch. of Otol.*, April, 1893).—The handle, which is of aluminium, is inclined to the operative shaft at such an angle that its axis passes through the point of the instrument, which is therefore, as in a straight one, wholly under control, and can be made to rotate without displacement, and to operate at will in any direction. The handle is united to the operative shaft by a short lateral piece at right angles to the latter. An inspection of the illustrations renders the advantages of this much-needed modification obvious.

6. Localised inflammation of the posterior superior quadrant of the membrana tympani.

Lake (*Lancet*, May 17, 1893), in a clinical note, describes the retention of inflammatory exudation which is apt to take place behind the portion of membrane indicated, which becomes red and bulges, whilst the remainder of the membrane is in a normal condition. The structures which shut off this posterior superior portion

from the rest of the tympanic cavity are the tendon of the tensor tympani, the descending process of the incus, the stapes, stapedius and pyramid, and chorda tympani. Any cause setting up inflammation in this region would effect this shutting off on account of the accompanying swelling. The secretion from the attic is also poured into this sub-chamber, and after incision a very large quantity of mucus can be removed by irrigation through the Eustachian tube. There is some risk of dividing the chorda tympani, and this happened in the experience of the writer on one occasion.

Treatment consists of incision, and irrigation of the cavity with $\frac{1}{6}$ per cent. salt solution.

7. Pain in otitis media.

B. H. Randall (*Amer. Jour. of the Med. Sciences*, Feb., 1893) (and **Braithwaite**, 1893).—After spraying the nares with a mild cleansing agent like Dobell's solution, and mopping the vault of the pharynx and mouths of the tubes with a curved cotton carrier, politzerisation should be practised gently, and then the best single measure at command is hot syringing with water as hot as can be borne. To combat the vascular engorgement and stasis, whether of canal or tympanum, its stimulating and constricting effect can hardly be surpassed, and as a means of allaying pain it is surer and quicker than almost all others. The physician summoned to a case of earache can generally leave his morphine and cocaine at home, if he will take his brow mirror, a syringe, and an atomiser.

8. Cholesteatomata of the ear:

Friedenwald (*Med. News*, March 11, 1893) says the treatment consists in thoroughly and frequently cleansing the middle ear with injections of warm water, which may contain mercuric perchloride (1 in 5,000), hydrogen dioxide, resorcin, and carbolic acid rect. Special canulas, narrow, long, and curved at the tip (Hartmann's is one of the best), are necessary to reach the recesses of the middle ear. In case the opening is too contracted it must be enlarged. When it is difficult to wash out the ear through the external meatus, it is sometimes possible to do so by injections into the Eustachian tube.

Polypi and carious bone must be removed. After thorough cleansing and drying, insufflation of boric acid, or a mixture of the latter with salicylic, or the instillation of solutions of these, should be employed, in order if possible to alter the character of the lining membrane and diminish or prevent the desquamation.

The operation of removal of the ossicles has been recommended, but should not be had recourse to unless the symptoms are

urgent. When there is reason to believe that the mastoid is the seat of a cholesteatoma, it should be opened. This is probably the case when large quantities of cholesteatomata are found in the discharge, and the process is sensitive to touch or to pressure, and there is deep-seated pain.

There is a great tendency for cholesteatomatous masses to recur, so that patients must be examined at intervals of a few months for a long time after there is an apparent cure.

9. Treatment of the nose and throat as a source of middle ear disease.

Barr (*Lancet*, December 17, 1892). The middle ear, from its intimate connection with the rhino-pharyngeal tract (being, in fact, an offshoot from this) is specially exposed to danger from energetic nasal treatment.

The most important factors favouring the entrance of liquid into the middle ear during the use of the syringe or douche, are most probably structural peculiarities in the nasal passages and Eustachian tubes, natural or induced by disease. For instance, in children, owing to the smallness of the nasopharyngeal space, the width and shortness of the tubes, and their limited control over the muscles of deglutition, there is more likelihood of liquid injected into the nasal passages finding its way into the middle ear. Also in adults, whose Eustachian tubes have been rendered abnormally patent by atrophy of the mucous membrane, or where the muscular mechanism of the Eustachian tube has been impaired, the resistance to the passage of air or liquid is diminished. Of these structural peculiarities, the partial or complete impermeability of one or other nasal passage, or of the cavity of the nasopharynx, is the most fruitful source of accident. In any case, whether obstructions in the nasal passages exist or not, the act of swallowing, whilst syringing, even with the utmost caution, greatly favours the entrance of liquid into the middle ear.

Syringing after cauterising operations, owing to the swelling that exists, is not without risk, and operators are cautioned against the possible introduction of micro-organisms along with the applications, by imperfectly cleaning and disinfecting the part of the cautery near the burner. The writer has seen permanent aggravation of deafness, in cases of *chronic adhesive catarrh*, follow upon operations on the nose and naso-pharynx for adenoids, etc.

10. Acute purulent otitis media with mastoid implication, due to caries of the second molar tooth.

E. Schwartz, in *Arch. of Otol.*, April, 1893 (translated by Toeplitz), published a case in order to show the importance of examining the condition of the teeth in aural and nasal affections.

There was violent pain in the ear, and otorrhœa of one week's duration ; also, in addition to a perforation, which could not be seen, there was a hard swelling in the anterior inferior wall of the meatus, obscuring its lumen. Later on mastoid tenderness appeared. There was a fistulous communication between the left nasal fossa and the alveolus of the second left upper molar. This closed on extraction of a carious root, and on opening the mastoid subsequently pus was evacuated. The exostosis-like swelling was an extension of inflammation from the palate. After the mastoid operation it disappeared, and the perforation in the membrana tympani closed.

11. Dermatol in otorrhœa.

S. A. Shantavsky (Epitome of *Brit. Med. Journal*, December 31, 1893) has used dermatol in both acute and chronic suppurative otitis, externa and media. Having first washed out the ear with a 3 per cent. boracic acid lotion, he thoroughly dries the parts with absorbent wool, and introduces deep into the meatus a plug of wool impregnated with dermatol powder. He speaks favourably of the anti-suppurative effects of the dermatol.

12. A new adaptation for intra-tympanic syringe.

Milligan described (in the Proceedings of the B. M. A., 1893, *Journal*, September 9) a plan of washing out the attic and atrium through an existing perforation by means of an intra-tympanic syringe supplied from an elevated reservoir. The advantages claimed for the method were : (1) That the syringe could be held perfectly steady while the fluid was streaming from the reservoir into the middle ear. (2) That during the whole manipulation, the point of the syringe was kept constantly in view (by the usual syringe, from the position in which it had to be held, the view of the deeply-lying parts of the ear was obstructed). (3) That by altering the weight of the reservoir the pressure of the out-going fluid could be regulated according to the special requirements of any particular case.

13. Eustachian synechiæ.

Robertson (*Brit. Med. Journal*, September 9, 1893) read a paper at Newcastle in which he described carefully the precise arrangement of the adventitious bands commonly found around the mouth of the Eustachian tubes. He attributed their formation to adhesions between tufts of a hypertrophied pharyngeal tonsil overlying an unusually prominent ostium tubæ. The subsequent retraction and atrophy of the tonsil determined the position, extent, and tension of the adhesions, which remained as white fibrous bands, distorting in a variety of ways the mouth of the tube. A rosy red injection, and a thickening of the substance of

the ostium, was observed in the neighbourhood of the insertion of the synechiæ. When the latter were attached to the upper limits of the tube, the opening was triangular; when to the posterior aspect, it became slit-shaped, thus the normal round shape of the opening was always altered. There were also the thick fleshy adhesions formed by the junction of thick bands of lateral granular pharyngitis with the lower part of the tube. With reference to the connection between these synechiæ and deafness, it was important to remove them, whether, from the length of time the causes had been in operation, the hearing had already become affected or not. Their existence interfered with the egress of secretion from the tubes, and maintained a condition of catarrh. Less frequently they were to be observed without any accompanying deafness. Everything pointed to the importance of early and complete removal of the pharyngeal tonsil. The best method of dealing with the bands was by breaking them down with the finger, which must be carried round the tube and directed against the later granular pharyngeal bands as well. After this the part was swabbed daily with a 4 per cent. solution of nitrate of silver, and inflation with catheter or Politzer's bag practised. Many cases of tubal catarrh treated this way terminated satisfactorily.

14. Suppurative otitis media and defective drainage.

Field (Harveian Lectures on Aural Suppuration, *Med. Press and Circular*, Jan., 1893). The inhalation of sewer gas, even in minute quantities, is a frequent cause of acute inflammation of the middle ear; septic germs from the gas, finding their way into the tympanic cavity by means of the Eustachian tube, and meeting there the requisite conditions of their ready development. Not only is profuse otorrhœa frequently seen (especially in children) to be occasioned solely by the emanations from defective drains, but otorrhœa, when already present from another cause, is undoubtedly aggravated and kept up by exposure to the same agency. It would appear, from observations that have been made, that the lungs and the ears are invaded by the same bacillus, and that pneumonia or otitis media may be the consequence, according as the former or the latter organs evince the greater proclivity to attack. Thus, in public schools where a number of boys are massed together and exposed to the same influence, one may often be called upon to treat acute suppurative catarrh of the middle ear amongst some of them, whilst scarlet fever, pneumonia, typhoid, or diphtheria is prevalent at the time. When two or more children are attacked who occupy the same room, there can be no question as to the microbic character of the disease.

A remarkable case is cited, in which a medical man, his wife, and family, suffered from diphtheria, otitis media with perforation and discharge, enteritis, and dysentery or diarrhoea, in repeated and alternating attacks, during a period of six years, owing to defective house sanitation, the patients recovering only after the drainage had been thoroughly overhauled. This proves that suppuration of the ear is to be regarded as one among many possible manifestations of the same morbid agent.

Sea-bathing is a well-known cause of inflammation of the ear; but the lecturer states his belief that this ailment is sometimes not a result of mere irritation and subsequent cold-catching. He calls attention to the contamination of the sea on our coasts by sewage, and the risks incurred by bathers of contracting aural disease through septic organisms gaining access to the middle ear by various modes of entry that are at once apparent.

15. Treatment of chronic suppuration of the middle ear by excision of the ossicles.

Milligan (Proceedings of Brit. Med. Assoc. at Newcastle, *Brit. Med. Journal*, Sept. 9, 1893) performs the operation as follows: Patient being anæsthetised, the head is allowed to rest on a firm and flat sand pillow. After thorough antiseptic cleansing, the meatus is filled with a 20 per cent. solution of cocaine for a few minutes, to reduce the vascularity of the tissues. A circular incision is now made round the remaining portion of the membrane with a straight probe-pointed knife. The tendon of the tensor tympani, if still intact, should now be divided close to its insertion into the long process of the malleus. The superior ligament of the malleus is next divided, and the ligaments of the malleo-incudal joint severed as completely as possible. Gentle traction is next made upon the malleus with fine forceps or loop of snare until it comes away. If the incus is now found to be diseased, it should be drawn down by a fine hook, and the incudo-stapedial joint divided by an angular knife. Should the incus be known to be carious before operating, it is advisable, after incising the membrane, to cut the ligaments of the incudo-stapedial joint first of all, and then to remove the malleus and incus together. Oozing of blood is rapidly mopped up by cotton-armed probes, of which there should be plenty at hand. The ear is then irrigated with boracic solution, dried, and insufflated with a small quantity of antiseptic powder. Where parietal caries exists, the diseased surface must be scraped away with small curettes. The author next read out particulars of 15 cases operated upon by himself, and resulting as follows: cured, 11; improved, 2; still under treatment, 2. Out of the 15, a new membrane was formed in 10. In 3 there was no

sign of regeneration ; in 2 a new one was in process of appearing. Of the 13 cases in which treatment was concluded, hearing was more or less improved in 8, remained as before in 3, distinctly worse in 2. Regarding the condition of the malleus and incus, they appear to have been about equally affected. As to the after-effects of the operation, vertigo was at times a troublesome symptom, and **Ludwig** has observed, after extraction of the malleus and incus, a passing loss of hearing, alteration in gait, and facial paralysis, owing, he believed, to injury of the labyrinthine wall and aqueductus Fallopii during extraction of the incus. After pointing out the hopelessness of cure in almost all cases of "attic" disease by local measures, **Milligan** alluded to the difficulties of the operation of extraction, owing to the small space available, and frequent obscuration of the parts by bleeding ; but the risks attending it were slight, and in case of its failing to arrest suppuration, antrectomy and clearing out of the contents of the middle ear could be resorted to later. He concluded his paper by summing up to the following effect : That when, in cases of chronic suppurative otitis with perforation of Schrapnell's membrane and parietal and ossicular caries, local treatment thoroughly carried out has failed, the operation as above detailed should be performed. That by it, as a rule, suppuration is either caused to cease altogether or to become greatly reduced. That vertigo, tinnitus, and earache are benefited or cured ; that deafness is usually benefited, rarely made worse ; and that in cases of chronic attic disease with normal atrium, the only perforation being in Schrapnell's membrane, the performance of this (or some similar operation) is probably the only means of cure.

In the discussion that followed, **Robertson** thought that **Milligan** had very correctly represented both English and Continental opinion on this subject. So long as the disease was confined to the ossicles, their removal might do good ; but if it were presumably in the attic, and extending to the antrum, the cause being deeper-seated, a cure was less hopeful. The head of the malleus and incus formed a floor to the attic, which, if removed, might lead to a better drainage of the space. His results had agreed in the main with **Milligan's**.

William Hill said he had performed the operation of removal of the ossicles under conditions similar to those described. In his last case, the treatment resulted in the cure of the discharge and the total relief of pain, but the patient suffered from great prostration, marked vertigo, and distressing tinnitus for nearly a fortnight, and the hearing power was decidedly worse. He thought the operation should not be undertaken without informing the

patient that it was one by which the hearing would not be likely to be improved, and that the deafness might even be increased.

Bronner, while approving the operation in certain cases, pointed out the danger of recurrence. In most cases where the ossicula were affected, the walls of the attic and antrum were also diseased, and here the only radical method of treatment was antrectomy, and the establishment of free drainage. Judging from his own experiences of the operation, he advised as the most reliable method of treatment of these cases enlarging, if necessary, any opening in the membrane, and syringing the attic or middle ear; then, if this was not effectual, to open the mastoid after two or three months, and drain.

Arbuthnot Lane thought the ossicles were only of secondary importance in the maintenance of chronic discharge, and that the advantage resulting from the operation was gained by removal of the membrane and improved drainage. He favoured the performance of antrectomy.

16. Partial myringectomy and removal of the incus and stapes.

Charles H. Burnett (*Medical News*, May 13, 1893) has modified somewhat the operation described under his name in the "Year-Book for 1893," p. 424. The present article is based upon ten cases of chronic non-suppurative catarrh, in which the incus and stapes were reached by excision of the posterior superior quadrant only of the membrana tympani; the results being variable, but relief either to the deafness or the tinnitus was generally obtained. The paper concludes thus:—

(1) The operation of partial excision of the membrana tympani (myringectomy of the posterior superior quadrant) is practically unattended by reaction.

(2) Consequently regeneration of the membrane is less likely to occur than when total excision of the membrane is performed.

(3) Removal of the malleus is not necessary for relief in cases of simple chronic catarrhal otitis media.

(4) The removal of the incus alone, or of the incus and the head and the crura of the stapes, is followed by results as good as when the incus and entire stapes are removed.

(5) Displacement of the incus and leaving it in the drum cavity, where the stapes is removed in part or in whole, is likely to be followed by inflammation of the middle ear.

(6) Removal of the incus alone, the membrana, malleus, and stapes being left in situ, gives more space in the drum cavity, increases its resonance, and permits freer access of sound-waves to the stapes, thereby improving the hearing.

In the *Brit. Med. Journal* for September 30, 1893, Burnett publishes ten more cases in which operation was undertaken for the relief of tympanic vertigo, and concludes thus:—

1. That removal of the retractive force of the sound conductors upon the stapes is the efficient means of relieving the tinnitus, deafness, and vertigo, due to the lesions of chronic catarrh.

2. That the removal of the retractive force upon the stapes can be accomplished efficiently and simply by removal of the incus alone, and even by resection of its long process.

3. That the improvement in these cases is due to the liberation of the stapes from the retractive power of the tensor tympani, and the consequent unimpeded action of the stapedius, which, relieved of the antagonism of the tensor tympani, tends all the more to draw the stapes from the fenestra ovalis, thus aiding in the isolation and improved mobility of the bonelet, as well as in removing its undue pressure inward upon the labyrinthine fluid.

4. It would seem wiser, therefore, in most cases of chronic catarrhal deafness, tinnitus, and vertigo, not to sever the stapedius tendon, and remove the stapes, but to be content with removal of the incus only.

5. The progressive improvement in hearing noted in many instances, must be due to the passive motion exerted upon the ankylosed stapes by sound waves, which are enabled to reach this bonelet more freely after the removal of the incus.

17. Stapedectomy.

Blake (*Arch. of Otol.*, Jan., 1893, *et seq.*) describes the operation as follows:—The ear to be operated on should be first carefully tested as to its hearing power, both by aural and bone conduction. The external auditory canal should be cleansed of cerumen and loose skin, and then washed with a weak bichloride solution on a cotton-tipped probe, and stopped with antiseptic cotton until the time of operation. The instruments employed are a paracentesis needle, a small angular knife for dividing the incudo-stapedial joint, a small blunt hook, and a pair of angular forceps; in addition to which should be added a small rectangular knife, to be passed between the incus and stapes after division of the joint to make sure the separation is complete, and a pair of very fine straight-tipped forceps, to be passed into the stapedial niche, if necessary, for the removal of a portion of the bone in case of fracture in the attempt at extraction. There are also required a number of cotton-tipped probes, a small bowl containing some weak bicarbonate of soda solution, some saturated solution of boric acid in alcohol, and solutions of cocaine of 10 and 20

per cent. respectively. The hands of the operator and assistant should be sterilised, and every antiseptic precaution taken. Five minutes before the operation, a few drops of a 10-per-cent. solution of cocaine are forced into the Eustachian tube through a catheter; the patient is then seated in a high-backed chair, his head being firmly held by an assistant. The incision of the membrana tympani (made by a paracentesis needle) is a modification of that by Miot, and begins at a point midway between the short process and the tip of the long process of the malleus, and close to the manubrium, then extends upwards along the posterior ligament of the short process and follows the periphery to a point posteriorly on a line with the tip of the manubrium, or it may be reversed; in either case a flap is formed, which falls downwards and outwards, leaving an opening with free access to the field of operation. Bleeding from the edges of the incision is controlled by applying sterilised solution of cocaine, and the hearing is tested. The next step is either to divide the stapedius, or previous to this if the stapes is in full view, the incudo-stapedial articulation, the latter being severed by the small angular knife, a larger angular knife being subsequently passed behind the incus to ensure separation. If it is decided to remove the incus, this can be done now: this may have been rendered necessary through rupture of the malleo-incudal joint having taken place whilst separating the incus from the stapes. The question next to decide is whether to merely mobilise the stapes, by division of folds in the niche or by circumcision, or whether it shall be extracted. In the latter instance the stapes should be first mobilised and then extracted, using for this purpose a slender blunt hook, curved very slightly backwards, which is passed behind the head and between the crura from above downwards. The resistance offered to the traction of the hook varies considerably in different cases; where the stapes comes away entire there is first a sense of contact resistance, followed by a sense of suction, but where, as in the cases of atrophy of the dura, the latter break, leaving the foot-plate in position, the contact resistance alone is felt. At the moment of removal of the stapes there is in the majority of cases a decided change in the character and rate of the pulse, which becomes smaller. Vertigo is a frequent contingency, and is apt to be a protracted one. The principal bleeding after that of the membrana is met with on division of the tendon of the stapedius, and the use of a fine cotton-tipped probe at that moment prevents the filling of the niche with blood. After the operation the ear should be lightly stopped with sterilised cotton or gauze, and the patient kept quiet for a few days.

18. Removal of the drum head and ossicles.

Black (*Med. News*, April 15, 1893).—The particulars of 5 cases operated on are as follows:—Two were attic disease with perforation of Schrapnell's membrane; the discharge ceased, and the tympanum became dry and healed, but hearing was not improved. The remaining 3 were dry adhesive catarrh. In 1 watch was heard on pressure over right ear, not at all in left; snapping of finger nails 8 inches from right ear; left 0. There was paracusis Willisii. After operation on left ear: voice (previously heard but not understood) at 6 inches; snapping of nails, 1 inch. No. 2. Right ear—Watch = 0; snapping of nails, $1\frac{1}{2}$ inch. Paracusis Willisii; maddening tinnitus; voice a jumble. Left ear—Watch 6 inches after operation (on right). Watch heard on pressure; snapping nails, 20 inches; voice, 12 inches; tinnitus partially relieved. No. 3. Right ear—Watch = 0; snapping finger nails = 0; voice, a confused sound. Left—Watch = 0; snapping fingers, 1 inch; voice at 2 inches. After operation on right ear—Snapping of finger nails heard $1\frac{1}{2}$ inch right and left; voice, 1 inch. Openings of membrana tympani permanent after repeated touchings with trichloracetic acid.

ON THE SURGICAL TREATMENT OF MASTOID DISEASE.

Macewen (*Brit. Med. Journal*, Sept. 9, 1893) opened the discussion on this subject. He referred to the surgical anatomy of the mastoid region, pointing out the relative position of the antrum, the lateral sinus, and the facial canal. He showed that the safety zone lay in a space in which he was always successful in striking the antrum, and which he called the "supra-meatal triangle." This depression was free from the lateral sinus, and if he operated on the upper and external part of it he was free from the facial canal, which lay beneath the floor of the passage between the antrum and the middle ear and traversed it to the inner side. Proceeding to describe his methods, the speaker stated that as a rule, after opening the antrum, the attic was exposed by enlarging the opening in a forward direction, the ossicles were then removed, and the whole of the granulation tissue in the middle ear cleared out. After this was done, the tegmen of the attic was carefully scrutinised, and if eroded, was fully opened up, the granulation tissue removed from the dura, the brain laid bare, and, if necessary, cut into. The abscess of the brain could be tapped from this region, but it had also to be opened above as well in order to remove sloughs of cerebral tissue which could not otherwise come

away. The lateral sinus was likewise dealt with in cases where disease had spread in its direction. In all these cases it was necessary to remove the focus of infective matter in the bone, and to cut off the parts by which it travelled from the brain. With regard to infective thrombosis of the sinus, he preferred to lay the sinus fully open, turn out the contents, separate the outer wall, and involute this membrane up on the inner wall of the sinus itself, retaining it in this position by abundance of iodoform and boric acid powder and iodoform gauze. He only advised ligaturing the internal jugular in those cases in which it was involved, because ligaturing it in sinus thrombosis did not prevent the infective matter from reaching the lungs by the anterior and posterior condyloid veins and subclavian. Reverting to the antrum, after fully exposing the entire cavity and its connections with the mastoid cells and removing the whole of the disease, he either stuffed the part, so as to cause it to heal up by granulation tissue from the bottom, or he established a permanent opening between the petrous bone and the outside of the head behind the ear. This he did by "papering" the passage with epithelium, spread both from the middle ear and the skin. This latter plan he adopted if the disease of the temporal bone had not been thoroughly evacuated, on account of the depth of the situation and the intricacies of the passage in which it lay; and as regards the results in these cases, he found it necessary to keep this opening permanent, there being in a proportion of them a good deal of sero-purulent discharge. With regard to infective purulent meningitis following upon aural disease, he now operated without hesitation and with excellent results in a majority of instances, as regards arresting the disease. He was equally successful in operations for sinus thrombosis, provided the lungs were not already implicated.

Victor Horsley agreed in almost every particular with what Professor Macewen had advanced. With regard to purulent otitis media, he thought that if the disease had not subsided after a year's antiseptic treatment, it was important to expose the antrum and lay it and the tympanic cavity into one. He had had excellent results as regards hearing-power after the operation, and maintained that there was no advantage in leaving the stapes *in situ*. After speaking of the value of prolonged drainage, in bringing about a radical cure, and agreeing with Macewen in the better results obtained where the mastoid was more implicated than the petrous bone, Horsley proceeded to the treatment of the facial nerve, and stated that when exposed by disease, its proximity could be ascertained by the twitching of the facial muscles which occurred when an instrument was passed across its

trunk. He thought that when completely destroyed by tuberculous disease, nerve-grafting might be done successfully in suitable cases. Passing to the subject of sinus thrombosis, he maintained that ligaturing the internal jugular was the only means of preventing the clot from becoming loose, and thus causing embolism of the heart or lungs, because it often extended beyond the emissory veins already alluded to. He agreed that in the case of abscess of the brain, the cavity of the ear must be completely opened and disinfected at the same time that the matter was let out from the brain.

Hugh E. Jone drew attention to a method of determining the condition of the mastoid before operating, by placing a vibrating tuning fork over it and ascertaining the intensity of the sound produced by means of an auscultation tube in the meatus. In the vast majority of cases, the sound was heard best and longest when placed over the supra-meatal triangle, just below the posterior zygomatic ridge and a little above and behind the osseous meatus. Here the antrum came nearest the surface, and could best be reached by operation. By comparing a number of cases he had laid the foundations for establishing a diagnosis by auscultation of the state of the mastoid bone as regards sclerosis, the presence of cholesteatomatous masses, fat, and proposed extending the same observations with a view to discovering the position of the lateral sinus.

William Hill showed a number of specimens of the temporal bone, prepared, some by **Jameson Clarke** and some by himself, which bore out many of the anatomical points insisted on by **Macewen**. In most of the specimens the postero-supero-meatal triangle with its pit could be well seen, and when this portion of the bone was removed, as in some of the bones shown, the temporal antrum was found at a variable depth beneath. The term mastoid antrum was a misnomer; the antrum was bounded superiorly and externally by the squamosal bone, internally by the petrous, and inferiorly by the mastoid portion of the petro-mastoid bone only. The term "temporal antrum" seemed to be free from objection.

Robertson remarked upon the curability of acute purulent otitis as compared with chronic, owing to the liability of the ear in the latter case to infection, which was apt to spread to neighbouring structures. It would appear that the secretions in acute otitis could withstand these infections, but not so in chronic. He spoke highly in favour of **Stacke's** operation, which protected the sinus facialis and semi-circular canal.

Rushton Parker advocated the routine use, before resorting to operation, of carbolised glycerine 1-20, as suggested to him by

Pagan Lowe, of Bath, in preference to antiseptic injections, which could not act thoroughly before the mastoid opening was made, and tended to drive inwards without removing the septic agents and products confined in the bony cavity. If suppuration were not checked by this means, he advocated early opening of the mastoid region by a small gouge.

Milligan advised opening up and exploring the attic at the same time as the antrum. The attic was so thoroughly adapted for the production and propagation of septic material, that it should be cleaned thoroughly, and the ossicles be, if necessary, removed too. Hearing power for conversation was sometimes remarkably benefited in these cases. Stacke's method of dividing the posterior meatal wall and folding the flaps backwards into the cavity of the bone formed during the process of opening the antrum was useful. In all cases in which cranial abscess was diagnosed and operated upon, the antrum should be opened at the same time; the mucous membrane of the latter was invariably affected and acted as a source of recurrence of disease.

Adam Politzer has a paper in *Brit. Med. Journal*, Dec. 31, 1892, on purulent otitis with mastoid complications following influenza; he describes his method of operating on the mastoid, which is virtually a gouging and scraping operation without complete antrectomy. In deep-seated abscesses he employs Gruber's secondary sutures, which shorten the duration of the healing process.

19. Notes on sixty cases of disease of the mastoid in which the antrum was opened.

Adolph Bronner (*Brit. Med. Journal*, Sept. 9, 1893, Proceedings of the Brit. Med. Assoc. at Newcastle) analysed the results of 60 cases, of which notes had been kept. No less than 25 were acute, and under one month's duration. In 17 cases there was an external fistula, in 21 there was a mastoid abscess, in 10 the mastoid process was thickened, in 8 there was no swelling, but pain on pressure, and in 4 there were no objective or subjective symptoms whatever in connection with the mastoid. In 8 cases the operation failed to relieve the symptoms, and the patient died in from 1 to 15 days. Fifty-two were relieved, and 36 of these cured within a year. In a number of the cases the discharge still continues owing, the author thinks, to neglect in the after-treatment. Bronner much prefers the method of operating first described by Schwartz, whose small chisels he employs, and not the trephine. He concluded his paper by giving the five indications laid down by Schwartz, for guidance as to operating, and urged the importance of proceeding to do so in every case of doubt.

20. Mastoid operations.

Pepper (*Clin. Journal*, February 1, 1893) says there are two definite conditions which should at once determine an operation. Firstly, where there is long continued aching pain with tenderness over the mastoid, even in the absence of suppuration or œdema external to it (but tenderness is usually present); and secondly, when a mastoid abscess has burst or been opened and a sinus remains.

The scooping operation should be carried out to such an extent as to remove all granulation tissue and carious bone (and the bony walls of the middle ear may be affected continuously); but the ossicles should be spared if possible, or at all events care taken not to increase the deafness already existing unnecessarily. In acute mastoid suppuration following scarlet fever the inflammation spreads rapidly to the antrum and cells. No time whatever should be lost in these cases in opening the antrum and evacuating the pus.

LATERAL SINUS PYÆMIA.

Ballance (*Clin. Journal*, September 20 and 27, 1893) publishes two lectures in the above, embodying his most recent views and experiences on this branch of cranio-aural surgery. After calling attention to the great importance of early diagnosis, especially from typhoid, he warns the surgeon in regard to *treatment* that the very worst thing he can do in any ear case with grave symptoms is to blister or poultice the mastoid region, or even to put on leeches, since if one has a case which may turn out to be lateral sinus pyæmia, or some other intracranial complication of ear disease, the diagnosis later on may be fatally hindered by blistering, leeching, or tampering in any way with the skin over such parts as may subsequently give important indications of deep-seated disease. None of these measures must therefore be had recourse to until the diagnosis is thoroughly made out. The only thing desirable is frequent irrigation of the external auditory meatus with an antiseptic fluid, and perhaps the application of a boracic fomentation. The treatment of lateral sinus pyæmia, whether in child or adult, is twofold—the local centre from which the infection is spreading must be destroyed, and the stream along which the infective elements are passing into the general circulation must be blocked. The first point is attained by freely opening the mastoid and thoroughly removing all carious bone and fœtid granulation tissue, swabbing the cavity with a strong antiseptic, and making free use of irrigation over the fresh cut

surfaces of the bone. By this time the groove for the lateral sinus is probably exposed, most of the mastoid has been cleared away, the mastoid antrum freely opened, and the posterior wall of the external meatus cut away. Thus the mastoid antrum, tympanum, and external meatus are thrown together into one huge cavity. At the posterior part of this cavity the posterior fossa is probably exposed, the long groove for the lateral sinus being visible. Out of that groove very likely some pus will well up; but if there is no extra-dural collection here set free, a search must be made along the posterior surface of the temporal bone as far as the internal auditory meatus. (In order to follow this description effectively, the reader should be provided with sections of the macerated skull or other suitable preparations.) In some cases the outer wall of the sinus will be sloughed where the opening in the skull has first been made, if so, one looks directly into the sinus, and very likely sees there pus and blood clot, or simply septic blood clot. This makes the case very simple as far as subsequent procedure is concerned. It is necessary to enlarge the opening in the skull by cutting with bone forceps upwards and backwards and downwards and forwards so as to expose the sinus for a considerable distance. There is no risk of hæmorrhage from the sinus as long as there is a fairly large opening in the skull, since if bleeding sets in it can be easily arrested by forceps or plug. Having made a sufficient opening, all loose septic clot is washed away and a temporary dressing is applied. The vein should be tied at once in the neck, and the surgeon must ligature below the clot to avoid displacement of a septic thrombus, which having been left in the lower segment might pass into the lung. With regard to the upper or septic portion of the vein, the best plan is to stitch it off long enough to the upper angle of the wound in the neck, the rest of the wound can then be closed. The nozzle of a syringe containing a solution of perchloride of mercury may then be inserted into the open mouth of the upper part of the vein, and septic clot from vein and sinus gently forced out from the opening behind the ear. In this way the venous channel is thoroughly cleansed. If it is certain that there is a septic clot in the vein it is best to tie it first, lest manipulating the lateral sinus might displace some of it and produce an infarct in the lung. In order to ascertain whether there is a clot in the sinus or not, the author does not think reliance should be placed on the passing of a grooved needle into it, since blood may pass along by the side of a contracted clot. He thinks that if there are well marked symptoms of pyæmia, it is better to deal with the case in the same manner, whether a clot can be detected

in the sinus or not, and *tie the vein*, it being quite useless to do a mastoid operation, however thoroughly, in the presence of serious septicæmic symptoms, without at the same time blocking the internal jugular and plugging the sinus to prevent the further passage of infective material into the circulation. In cases of *doubtful* constitutional infection it is wisest to operate. Chronic purulent otorrhœa, being at any time liable to become a source of infection of a fatal pyæmia, should be submitted to antrectomy, and thorough flushing and draining, if it has not yielded to treatment in a year's time, or if diseased bone is present, considerably before. In his second lecture Ballance discusses the treatment of lateral sinus pyæmia complicated by abscess in the temporo-sphenoidal lobe and cerebellum, the latter of which he considers the more common, and describes three fatal cases. He concludes by stating that the full operation already detailed may be imperatively called for—(a) when there is no earache; (b) when there is no otorrhœa; (c) when the otorrhœa is inodorous; (d) when there are no signs of inflammation over the mastoid; (e) when the patient has not had a rigor; (f) when the sinus is not thrombosed; (g) when secondary deposits are suspected or known to have taken place.

Arbuthnot Lane (Section of Otology, Newcastle meeting, reported in *Brit. Med. Journal*, Sept. 9, 1893), after detailing a series of cases, stated with reference to *treatment* that it occasionally happens that when there is obvious thrombosis of the lateral sinus, and clinical evidence of it, as shown by the temperature, such thrombosis will cease to produce symptoms when the extra-dural abscess has been thoroughly evacuated by surgical interference or spontaneously. In septic infection of the sinus, apparently without thrombosis, ligature of the internal jugular vein, after the extra-dural abscess has been evacuated, may stop the rigors only after the sinus has become thrombosed, and not till then. Again, ligature of the vein and sinus in a case of septic infection, apparently without thrombosis, may not stop the progress of secondary foci, even though coagulation takes place in the sinus, owing to the extension of the septic process along the petrosal sinuses to the cavernous sinus.

When extensive thrombosis exists, it does not seem necessary to remove the whole of the proximal (torcular) and distal (jugular) portions of the clot. This was illustrated more forcibly still by a remarkable case published by Parkin, of Hull, in the *Lancet* of March 11, 1893. In that he found that the jugular vein was thrombosed beyond the lowest point at which he was able to ligature it. The same case showed very well that the

presence of secondary foci of septic infection does not preclude the possibility of recovery, provided the further supply of septic emboli be stopped. However advisable it may seem to ligature the internal jugular vein beyond the limit of the thrombus, and perhaps to remove its proximal part, there is no evidence to show that the complete removal of the distal portion of the clot is necessary, or that leaving it produced any effect that was prejudicial to the health of the patient.

In spite of the variations in the activity and character of the conditions which result from septic infection of the lateral sinus, it would seem that the most scientific and most certain measure to adopt in every case is—after performing antrectomy, which is a necessary antecedent of every operation of this sort, ligaturing the internal jugular vein, and clearing out the extra-dural abscess—to remove as much as possible of the proximal portion of the clot, and then the whole of the distal portion, or, if there be no thrombosis, to slit up the sinus beyond the limits of the abscess wall, and plug it with gauze and iodoform.

DISEASES OF THE THROAT AND NOSE.

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I.—TONSILS.

1. Notes on acute tonsillitis.

Solis-Cohen (*Med. News*, April 29, 1893) insists on the accurate separation of cases of rheumatic from non-rheumatic tonsillitis, with a view to ensuring increased accuracy of treatment. He gives us the following points as guides in connection with rheumatic cases :—

- (1) Personal or family history of the patient.
- (2) Tendency to frequent recurrence.
- (3) The occurrence of symptoms, local or general, before any evidence of inflammation is visible on inspection of the throat. Also the tendency to partial or complete subsidence of nervous and febrile symptoms with the occurrence of local signs.
- (4) The coincidence of one or more rheumatic symptoms, even though vague, with sore throat.
- (5) The existence of any joint symptoms, especially pain on motion, or stiffness.
- (6) Excessive acidity of the urine, excess of urates, and, in rare instances, albuminuria, pointing to rheumatic origin.
- (7) The occurrence of anomalous eruptions.

The local treatment in rheumatic cases is the use of the following gargle :—

R \bar{y} Tinct. guaiaci. ammon.	...	...	...	...	...	3iv.
Tinct. cinchonæ co.	...	...	...	...	...	3ij.
Refined honey	...	...	...	...	...	3vj.
Mix, and add to this slowly—						
Inf. cocæ conc.	...	...	...	...	...	3ij.
Aq. ad.	...	...	...	...	...	3vj.
In this dissolve—						
Sodæ salicylatis	...	...	...	...	...	grs. xc.

One tablespoonful of this mixture is to be used in divided portions as a gargle, and, if advisable, a little may be swallowed. Heat is applied externally, and, where the glands are much involved, inunctions of a 50 per cent. ichthyol ointment are made.

In anæmic patients tincture of iron may be combined with salicylate of soda. The bowels are to be kept freely open. Ice may be sucked and a milk diet prescribed.

2. A new instrument for controlling tonsillar hæmorrhage.

H. Hoyle Butts (*Med. Record*, July 1, 1893) has invented this instrument, which is thus described:—"It is six and three-quarter inches long, and consists of two parallel steel blades, locked together at the point where they join their handles. To the tips of the blades, which are four inches long, and are curved outward and backward in their last half inch, there are attached on the outside and at right angles ovoid pads, through which the compression is exerted. The pads are of metal, and are symmetrical; each one is an inch long, and half an inch wide at its base, from which it gradually tapers to the apex, where it measures one-eighth of an inch in width. The surface of the pad is directed outward and backward, is convex in shape, perfectly smooth, and has rounded edges. The handles of the instrument are bent downward, and are continuous with the shaft; they are connected at their extremities by a threaded screw rod, that passes through and emerges from the right one. At the outer side of the latter there is a milled wheel that travels on this rod, serving to hold the pressure at any given place. A spring of moderate strength has been inserted between the handles to create enough resistance to the pressure of the hand to ensure a firm grip upon the instrument when it is in use, and to close it when at rest. By the approximation of the handles, the pressure pads may be separated four inches, a limit which will be found to be more than ample for the purpose intended.

"The instrument is used as follows:—Having placed the patient in the best obtainable light, and his mouth being widely opened, the tongue should be depressed with a spatula, held in the operator's right hand, and the tip of the instrument directed by the movements of the left hand, quickly introduced and carried back into the pharynx, so that the pressure pads will be at a point slightly beyond the bleeding surfaces; the distal end should then be opened widely enough to cause firm pressure with the pads upon the area of wounded tissue. This is done by closing the spring handles with the grasp of the left hand. The tongue depressor may now be discarded, leaving the right hand free to work the wheel running on the thread of the connecting rod. The amount of pressure to be used is in this way easily regulated."

3. Removal of the tonsil for primary epithelioma or sarcoma.

Macintyre (*Journal of Laryngol., Rhinol., and Otol.*, Aug., 1893) insists on the importance of the careful removal of the mucous membrane at the junction of the side of the tongue and the anterior faucial pillar, along with the pillars of the fauces and the tonsils, in malignant disease of the latter. In both the cases reported this was found to be affected, and was removed; and in neither case has recurrence been observed.

II.—PHARYNX.

4. Lactic acid and pyoktannin in pharyngeal tuberculosis.

Heryng (*Abs. in Journal of Laryngol., Rhinol., and Otol.*, April, 1893) reports a case of tubercular disease of the pharynx, in which applications of 80 per cent. solution of lactic acid and 1 per cent. solution of pyoktannin were completely successful.

5. The treatment of mycosis leptothricia.

Colin (*Journal of Laryngol., Rhinol., and Otol.*, May, 1893) advocates ablation—as complete as possible—of the leptothrix productions, and swabbing with an iodated iodine solution, either alone or in conjunction with a solution of chloride of zinc. A case of Heryng's is referred to, in which cigar smoking brought about cure in three months after various remedies had been tried in vain.

Cheatham (*The American Practitioner and News*, May 20, 1893) says that the teeth should be carefully attended to in order that any nidus in them may be destroyed. The deposits should be removed by forceps, curette, or galvano-cautery point. The digestive functions should be regulated, and the internal administration of calomel, with alkalies, salol, and naphthalin, are beneficial. (*Vide* "Year Book" for 1893, p. 436.)

6. The treatment of retropharyngeal abscess by incision through the skin.

Phocas (*Sem. Méd.*, Dec. 24, 1892) makes his incision through the skin, posterior to the sterno-mastoid. He prefers doing this to opening the abscess through the mucous membrane, as it obviates the danger of wounding the carotid, which is liable to be displaced by the abscess sac. The risk of pus getting into the wind-pipe and causing suffocation, or, later, broncho-pneumonia, is done away with; and lastly, it is safer to administer chloroform in this method of operation.

7. Alummol and diaphtherin in diseases of the throat and nose.

Spengler (*Münch. med. Woch.*, No. 13, 1893; Abs. in *Brit. Med. Journal*, April 22, 1893) has treated two cases of acute and six cases of chronic pharyngitis, four of which were examples of pharyngitis sicca complicated with rhinitis atrophica and ozæna, by swabbing the mucous membrane with a 5 per cent. solution of *alummol*, and is pleased with the patient's progress. He also treated ten cases of acute and chronic laryngitis with stronger solutions of the same drug—*e.g.* 20 per cent. solution—but with less benefit; in fact, chloride of zinc is preferable.

Whilst *alummol* solution failed to benefit empyema of the antrum, he found that solutions of $\frac{1}{2}$ to 1 per cent. of *diaphtherin* were very valuable.

8. New method of cutting œsophageal stricture.

Abbe (Reprint from the *Medical Record*, Feb. 25, 1893; Abs. in *Brit. Med. Journal*, Sept. 9, 1893) describes a new method of dividing cicatricial stricture of the œsophagus, which he practised with very good results on a patient aged thirty. After the performance of gastrostomy, a digital examination is made of the lower œsophageal orifice, and a small conical gum-elastic bougie is guided into the canal by the finger. A string of heavy-braided ligature silk is carried from the stomach to the mouth by passing a small bougie through the œsophageal stricture. In the case reported by the author, the upper end of the string was brought out by the neck through a wound which had been made in an unsuccessful attempt at external division of the stricture. A larger bougie is now passed from the stomach alongside the string, and pressed tightly into the stricture so as to stretch it. The string is now drawn upwards by the fingers, passed to the back of the patient's mouth, and the bougie will be felt to advance at once as the string makes its way into the tense stricture. Larger bougies are now passed, and the string is "see-sawed" upwards and downwards. When the largest size has been passed, a rubber tube of corresponding size is drawn through the œsophagus past the point of stricture, its lower end remaining outside the wound in the stomach. A smaller tube is passed into the stomach for nourishment. The patient can thus drink water for refreshing the mouth, and swallow saliva without contaminating the wounded surface, which the tube also serves to keep dilated. The large tube may be removed on the second or third day, and dilating bougies be introduced by the mouth after the fourth day. Finally the gastrostomy wound may be closed, whenever the patient has gained strength, by a plastic operation.

III.—LARYNX.

9. Pachydermia laryngis.

McBride (*Edin. Med. Journal*, April, 1893) administers iodide of potassium internally in small doses, and sprays the larynx with solutions of salt and water, or 2 to 3 per cent. of acetic acid. Intralaryngeal injections of acetic acid solutions are also valuable, and in certain cases the lesions are so situated as to demand surgical interference. Several other writers have published cases of pachydermia, and the above appears to be the recognised method of treatment.—(*Vide* "Year-Book" for 1893, p. 437.)

10. The surgical treatment of laryngeal tuberculosis.

Castex read a paper on this subject before the French Society of Otology and Laryngology on May 12 to 15, 1893 (*Journal of Laryngol., Rhinol., and Otol.*, June, 1893). He prefers Heryng's or Krause's curettes when it is desirable to operate on a fixed spot—*e.g.*, the anterior and posterior supra-glottic regions. When, however, it is necessary to operate on a part of the larynx that is movable—*e.g.*, the epiglottis and the summit of the arytenoids, we must use a double curette, which fixes the part before excising it. Before operating he recommends that the cavity be disinfected for five or six days by means of insufflations of iodoform; after curetting, a 50 to 80 per cent. solution of lactic acid should be applied to the bleeding surfaces.

Heryng (*Journal of Laryngol., Rhinol., and Otol.*, Aug. and Sept., 1893) says:—The success of the surgical treatment of laryngeal phthisis will depend upon:—

- (1) The local character of the disease, its extent and nature.
- (2) The general condition of the patient, his nutrition and strength.
- (3) The anatomical character and extent of the lung affection.
- (4) The patient's age, constitution, occupation, social position and temperament.
- (5) The thoroughness of the operation itself, and this in turn depends upon the localisation of the process to parts from which as radical a removal as possible of the diseased tissue is technically possible.

(6) The carefulness of the after-treatment and, on account of the complicating lung affection, the ability to carry out, consistently, and for a sufficient period, a hygienic and dietetic regimen, and to obtain, if necessary, a change of climate.

In spite of taking all these points into consideration, it is exceedingly difficult to form a prognosis, and very often nothing

definite can be expressed. Nevertheless, with equal certainty, it may be affirmed that in rare cases complete healing of the tubercular process in the larynx, lasting for years, has been observed, and indisputable anatomical proofs raise this fact to the position of a scientific axiom ; further, that partial cures in many cases continue for a considerable time, that dysphagia and dysphonia and frequently dyspnoea, can be removed by surgical measures, and that now we are not so helpless in these dangerous conditions as formerly. The total number of cases of laryngeal tuberculosis observed between 1887 and 1893 amounts to 851, of which 252 were treated by curetting, and the results were very gratifying. Even in advanced cases, when there is much dysphagia with infiltration of the posterior wall of the larynx or of the epiglottis, this is mitigated by surgery. The wounds made usually heal in from ten to twenty days, and, in order to prevent suppuration and infection, Heryng recommends that a solution of 1 or 2 per cent. of blue pyoktannin should be applied to the scraped surface, twice a day for the first few days, and then once daily. This cleanses the wound and hastens cicatrisation.

Writing on the subject of *electrolysis* in tuberculous laryngitis, Heryng (*Therap. Monat.*, Feb., 1893) uses this method of treatment in the following cases :—

(1) Diffused hard tumour-like infiltration of the ventricular bands, and nodules in this situation, in order to obviate the risk of hæmorrhage.

(2) Chronic affections of the vocal cords, with little or no ulceration, in which lactic acid does not penetrate deeply enough.

In the former cases he uses a rectangular electrode, the point being introduced from within outwards, in the latter a stirrup-shaped electrode. The current strength varies from 20 to 50 milliampères, according to the duration of the application. Healthy cicatrisation is thereby set up, which is especially well marked on the epiglottis.

11. The treatment of tuberculous laryngitis with modified tuberculin.

Max Thorner (*Med. News*, Jan. 28, 1893) reports favourably of the action of injections of Hunter's modification B of tuberculin in two cases of tubercular affection of the larynx, in both of which ulceration was visible. The drug was administered in gradually increasing doses from .0025 gramme to .1 gramme. The ulcers healed, excrescences decreased in size, hyperæmia became less, the mobility of the vocal cords was increased, and dysphagia was subdued. Reaction after the injections was very slight.

12. Antipyrin as a local anæsthetic in throat affections.

Neumann (*Pesth Med.-Chir. Presse*, No. 3, 1893; abstract in *Brit. Med. Journal*, May 13, 1893) says that 30 to 50 per cent. solutions of antipyrin are very useful as a local anæsthetic when applied to the throat. The effect lasts longer, but is not so profound as that of cocaine. Insufflation of a powder consisting of equal parts of antipyrin and starch is of value in painful perichondritic affections of the larynx. The relief obtained is more lasting than that given by cocaine, tolerance is not established, and it is innocuous.—(*Vide* "Year-Book" for 1893, p. 436.)

13. Removal of papilloma of the larynx in children.

Pitts (*Brit. Med. Journal*, July 15, 1893) recommends thyrotomy in these cases, with tracheotomy at the same time as or preceding the former operation. Endo-laryngeal methods of removal are very difficult, and, in many of these little patients, even impossible to carry out. Intubation is liable to set up bleeding and irritation of the parts, and is not to be advised, and there is no sufficient evidence that tracheotomy alone is capable of curing the tendency to growth, or of removing what has already taken place. Thyrotomy having been performed and the growths being exposed, curved scissors are best adapted to trim away the growth, and are better than the curette, which leaves the bases of the little tumours untouched. A fine point of Paquelin's cautery is the best agent for cauterising, as it is more exact in its action than mineral caustics—*e.g.*, chromic acid. When operating on recurrent papilloma and the larynx has to be opened for the second or third time, it is advisable not to suture the two halves of the thyroid cartilage together, in the hope that a more roomy larynx will thus be obtained. The results of thus leaving the cartilage unsutured are as good, so far as voice production is concerned, as when closer approximation is aimed at.

IV.—NOSE AND NASO-PHARYNX.

14. The correction of deformity resulting from abscess of the nasal septum.

Roe (*Journal of Laryngol., Rhinol., and Otol.*, Nov., 1892) thus describes his operation :—There was, as usual in these cases, marked thickening and widening of the dorsum of the nose proportionate to the amount of flattening. The thickened ridge of tissue was incised on both sides, a short distance from the septum, at a point where it thinned into the ala. The incision was made along the edge

of the flattened tissue through the cartilage of the ala to the under side of the skin, care being taken not to wound the latter, which was raised from the dorsum of the nose. These flaps were then turned upward and held in place by small ivory spring plates on each side, having holes through which sutures were passed from one to the other, extending through the flaps. These threads were then tied so as to hold the flaps firmly in place, care being exercised not to strangle the part. These relieved the flattened condition of the nose, but not entirely. Owing to the entire absence of the triangular cartilage, there was not sufficient support to hold the nose upright. In order to increase the solidity of the septum, each side of the lower portion should be first scarified, leaving, however, the front portion of the skin intact; wide thick flaps are then cut from the floor of the nostril opposite the portion of the septum which it is desired to render more rigid. These are turned upwards and fastened together with clamps, in the manner similar to the upper flaps. The upper borders of these flaps are then connected to the cut portion of the septum with fine sutures. In order to maintain the nose in position until the parts are healed, a small spiral spring is used. The result is said to be excellent.

15. Electrolysis in the treatment of hypertrophic rhinitis.

Scheppegegrell (*New Orleans Med. and Surg. Journal*, Sept., 1892) obtains the best results with a current of 10 milliamperes applied for ten minutes. After removal of the needle the parts are touched with collodion in order to exclude air. For very large hypertrophies the galvano-cautery may have to be used.

Draispul (*Journal of Laryngol., Rhinol., and Otol.*, Feb., 1893) treated a case of epithelioma of the tongue with secondary infiltration of the cervical glands by electrolysis.

He inserted a steel needle connected with the negative pole, and carrying a current of 10 to 12 milliamperes for ten minutes at a sitting. After six sittings at intervals of three or four days, the epithelioma cicatrised, and the enlarged glands returned to their normal size.

16. An operation for opening the frontal sinus.

Mayo Collier (*Journal of Laryngol., Rhinol., and Otol.*, Jan., 1893) thus describes his operation:—A note is to be made of the exact spot in the mid-line between the eyes, on the upper margin of the orbit, in which the pin of the trephine is to be placed—hence called the “pin spot.” An incision is made exactly in the mid-line, commencing at the root of the nose, below the glabellum, and this is carried upwards for about two inches. The pericranial

covering is then raised and retracted. A trephine the crown of which is as large as a sixpence, or even less, is now to be placed with its pin on the "pin spot." In working the trephine great care must be taken not to lacerate or open the lining of the sinuses. One or both of the sinuses is next to be opened with forceps and scissors and examined, and if diseased mucous membrane is discovered, curetting, the application of the cautery, or solutions of chloride of zinc are to be used.

Above all things, an opening into the nose must be established and a drainage-tube inserted. Careful ablution with an antiseptic fluid every day is necessary. The result is said to be usually immediately beneficial.

Lichtwitz read a paper on "Latent Empyema of the Frontal Sinus diagnosed and treated by the Natural Passages," before the Society of Laryngology, Rhinology, and Otology, of Paris, on Feb. 3, 1893 (reported in *Journal of Laryngol., Rhinol., and Otol.*, July, 1893).

Jurasz and Schuller are quoted as having successfully treated cases in this way, and Hartmann and Grünwald as having diagnosed them, but as having treated them by trephining.

Zuckerkindl is quoted as throwing doubt on the practicability of the procedure, whilst Hausberg, Cholewa, and Hartmann believe that it can be performed in about 50 per cent. of all cases requiring it. Katzenstein considers it only possible where the fronto-nasal canal is replaced by a large orifice.

Lichtwitz practised catheterisation *per vias naturales* on thirteen specimens, and was able to carry it out in nine of them. The obstructions met with were:—

- (1) Extreme prominence of the unciform process.
- (2) The middle turbinate.
- (3) The bulla ethmoidalis.

These were best avoided by introducing the instrument from behind and below instead of from in front and below.

It is also to be remembered that the fronto-nasal canal forms nearly a right angle with a line drawn from the floor of the orifice of the nose to the superior extremity of the infundibulum. A canula bent at a right angle at 1 centimètre from its extremity was employed.

Where the sinus is unhealthy the canal is usually abnormally wide, and allows the tube to enter the nose for as much as 7 centimètres.

Seven patients were treated in this way, antiseptic irrigation being carried out through the canula thus introduced, and in all there is improvement, as shown by the steady decrease of pain

and discharge, the pus coming away when the irrigation is practised.

17. A new nasal septum knife.

Major, of Montreal (*Journal of Laryngol., Rhinol., and Otol.*, Feb., 1893), describes and figures his knife, which is made by Mayer and Meltzer, London (Fig. 1).

It is especially designed for those cases in which there is a long crest or spur running horizontally along the lower third of the septum. The advantages it possesses over the saw are that the

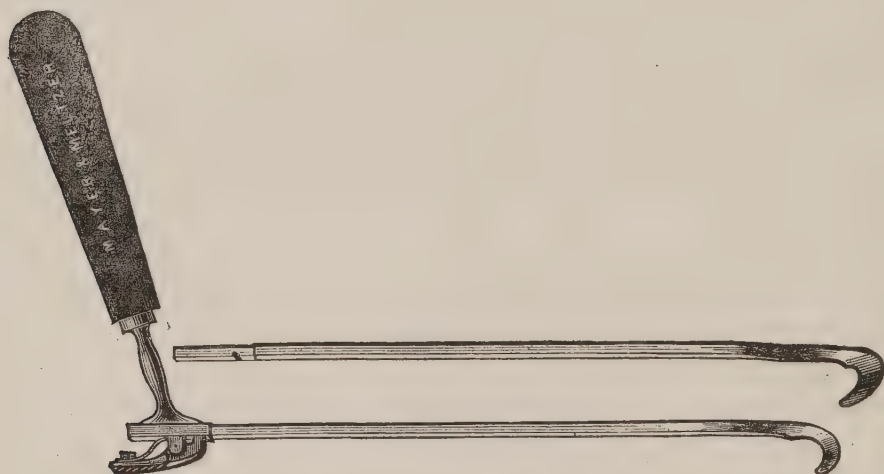


Fig. 1.—New Nasal Septum-Knife.

operation is done more quickly and less painfully, and the bleeding does not obscure the vision.

18. Epistaxis treated by the "umbrella fashion."

Stephens (*Times and Register*, Nov. 26, 1892) pushes a piece of rag through the nostril to the pharynx so that it forms a pouch; this is tightly packed with carbolic wool, and the ends of the rag are secured. It is said to be very successful in checking epistaxis.

In connection with nasal plugging the following communication made by Gellé to the Society of Laryngology and Rhinology of Paris, on April 7, 1893 (*Journal of Laryngol., Rhinol., and Otol.*, Aug., 1893), on *empyema of the maxillary sinus consecutive on complete tamponing of the left nasal fossa*, is of interest:—

The tampon was left in the nostril for ten days, when shivering occurred; it was then removed and antiseptic douches were employed. A discharge of stinking pus continued, however, for a month. Then suborbital and orbital neuralgia occurred, accompanied by swelling of the left cheek and œdema of the eyelid, and

insensibility to pressure occurred. A fetid plug was removed, and an unpleasant discharge, evidently of antral origin, persisted for a year.—(*Vide* “Year-Book” for 1893, p. 446.)

19. Tincture of iodine in atrophic rhinitis and pharyngitis.

Wroblewski (*Journal of Laryngol., Rhinol., and Otol.*, April, 1893) advises friction of the affected mucous membrane with tincture of iodine, a 5 per cent. solution of cocaine having been previously applied. It is also good in leptothrícia pharyngis, and hæmorrhage arising from swollen mucous membrane in the vault of the pharynx.

Kuttner (*Therap. Monat.*, March, 1893; abstract in *Brit. Med. Journal*, July 15, 1893) writes thus of the treatment of ozæna:—In order to secure efficient cleansing, which should be accompanied by any other suitable form of treatment, the author has devised an apparatus consisting of a spirit lamp and kettle, the steam from the latter escaping into an open glass cylinder attached to the patient and surrounding the orifices of the nose, which simultaneously are made more patent by a special wire speculum; the air entering the open end of the cylinder cools the steam, which the patient is directed to inhale deeply for periods of from five to seven minutes, two or three times daily, this sufficing to remove all moist and dry secretions. Tubes dipping into medicated solutions were connected at a right angle with the steam-pipe, medicated sprays being thus formed, and both practically and experimentally bicarbonate of soda was found to be most efficacious in dissolving the hard dried-up secretions formed. In a large number of patients experimented on, the nose and throat were thus kept perfectly clean and odourless, without producing any unpleasant results. The author considers this method to be more advantageous than any hitherto suggested.

20. A new method of puncturing the antrum of Highmore for diagnosis and treatment.

Brown (*Journal of Laryngol., Rhinol., and Otol.*, May, 1893) cocainises the mucous membrane, or even injects submucously a 10 per cent. solution of cocaine. Having cut out a circular piece of mucous membrane with a tubular knife, below the gingivo-labial fold, between the roots of the second bicuspid and the first molar tooth, he then directs a drill, worked by an electro-motor, upwards and backwards at an angle of about forty-five degrees with the plane of the alveolus. The antrum is thus entered at its most dependent part. A burr can be used to enlarge the opening thus made for free drainage. Food does not get into the cavity, and daily irrigation can be easily carried

out through a gold tube inserted in the hole in the bone and clasped in position.

21. The treatment of empyema of the sphenoidal sinus.

Moure (*Sem. Méd.*, May 17, 1893 ; abstract in *Brit. Med. Journal*, July 1, 1893) advises that a catheter should be passed backwards towards the sphenoid bone along the middle meatus and close to the septum. As the catheter passes backwards the tip is turned up until it is felt to be in a small hole, when it is pushed backwards into the sinus. Irrigation with warm antiseptic solutions is then carried out. If the orifice of the sinus cannot be found, it is advised to make an artificial one through the anterior wall, which is very thin. If the catheter cannot be passed on account of the middle turbinated bone, part of the bone should be removed. Further treatment by irrigation, insufflation of powders, etc., is adopted, according to the case. In every case great care must be taken in the operation.

22. Chloroform injections for the removal of maggots in the nose.

Kimball (*New York Med. Journal*, March 11, 1893) injected 2 drachms of pure chloroform into the nostril of a patient afflicted with this trouble. This was followed by the application of carbolised oil, and the nostrils were washed out with a ten-volume solution of peroxide of hydrogen. The effect was immediate, one hundred dead larvæ being expelled by syringing and sneezing, and, in all, not less than three hundred were removed, and cure took place. The fly is the *Sarcophaga Georgina* (Wildemann), and is 12 millimètres long ; the larva, commonly called the "screw worm," is 18 millimètres long.

Cerna (*New York Med. Journal*, April 1, 1893) says, in a letter, that calomel insufflation is quite sufficient to kill these pests.

23. An improved écraseur snare.

There are already many nasal snares. The advantages claimed for the snare (Fig. 2) designed by G. C. Wilkin (*Brit. Med. Journal*, March 11, 1893), are that (1) it can be held and worked by the same hand. (2) The wire loop, when surrounding tissue is to be removed, can be quickly made smaller by the index finger drawing the retractor towards the finger-rest, whilst the *écraseur* wheel, which is kept in contact with the barrel by the thumbs of the hands holding the snare, can be made to begin work so soon as the loop firmly grasps the growth. (3) The finger-rest enables the operator to give additional steadiness to the instrument, and it has been so made to represent two lateral rests, between which the retractor can pass ; the metal

part of the handle has also been perforated, so as to allow of the retractor and carrier passing the end of the barrel. (4) The screw of the carrier bites sufficiently firmly whilst passing through the densest tissues; the nut of the carrier is worked by a key, which is kept, when not in use, in the handle. (5) As the joint is separate from the barrel, any form can be used. (6) An uninterrupted view of the nose, throat, and ear can be obtained during the operation on either of these organs, as the snare is

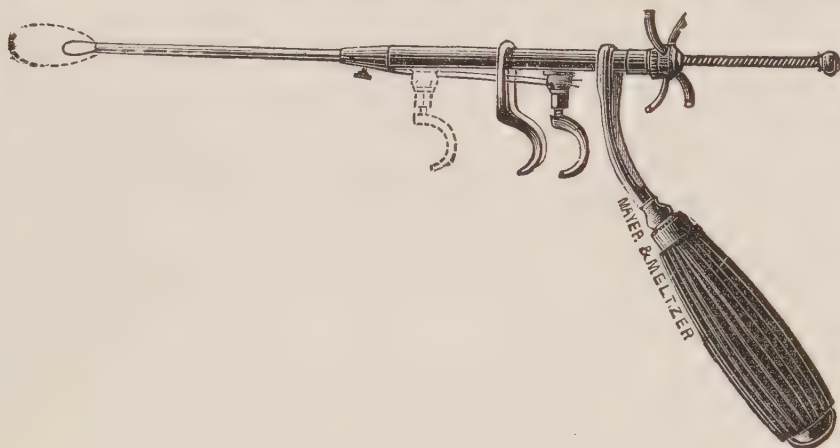


Fig. 2.—Improved Écraseur Snare.

worked entirely from its under surface. It is made by Messrs. Mayer and Meltzer, Great Portland Street.

24. Transillumination.

Chevalier Jackson, of Pittsburg (*New York Med. Record*, Oct. 29, 1892; abstract in *Brit. Med. Journal*, Dec. 17, 1892), states that for some years he has used transillumination in the examination of the nose and accessory cavities. He describes an instrument which obviates some of the practical disadvantages which have prevented the general use of this method of illumination. It consists of two parts, an electric lamp and a silvered glass rod. The lamp is of 50-candle power, enclosed in a case silvered within and blackened without. Projecting from the side of the case is a metal neck into which fits a perforated asbestos cork; through the cork passes the glass rod, otherwise the case is light-tight. The glass rod, which may be bent into any convenient shape, is silvered over, except at the ends, and the silvering is protected by varnish. The brilliant light within the lamp-case is transmitted axially through this rod, and issues from the distal end "with undiminished intensity." The rod does not get hot, and should be slightly warmed before introduction. A rod, hooked at the distal end, can be passed behind the soft palate; if the patient

then close his lips inspection through the anterior nares shows the nasal cavities brilliantly illuminated. Placed on the tongue, "brilliant and practical transillumination of the antrum is had," and the "nasal cavities are brilliantly transilluminated, the outer wall under the overhanging inferior turbinated more thoroughly than can be done in any other way. . . . The distal end in one nostril brilliantly illuminates the other nasal chamber. Placed externally over the thyroid cartilage, the larynx may be seen with the laryngoscope to be a bright red glare."

V.—VARIA.

25. The value of sprays in the treatment of catarrhal affections of the upper air-passages.

Rice read a paper on this subject before the American Laryngological Association (*Med. Record*, July 28, 1893). He warns us that sprayed petroleum preparations, whilst of much value, have the drawback that they tend to dry the nasal passages if inconsiderately used. The stimulating and antiseptic properties of such drugs as iodoform and aristol are much lessened by being mixed with oily reagents. A weak solution of cocaine—*e.g.*, less than 1 per cent.—is as good an astringent as we can use. The pressure exerted in spraying ought not to be more than 15 lbs. to the square inch in the anterior nares, and 25 to 30 lbs. in the posterior nares.

In the discussion that followed, **Bosworth** said that he restricts the use of the spray to mere cleansing, but **Mackenzie**, **Asch**, and others considered its sphere of usefulness to be wider than this.

Barr (*Lancet*, Dec. 17, 1892) draws attention to the care with which nasal douches ought to be used, and lays stress on the following points:—(1) Inject the fluid into the obstructed nostril, if one be narrower than the other. (2) Use slight force and employ a loose-fitting nozzle. (3) Mix 1 per cent. salt or soda, with or without an antiseptic, with the warm water. (4) Avoid swallowing at the time of the injection, and do not blow the nose for fifteen minutes after the syringe has been used. (5) After nasal operations douches ought to be used with great care, and it is doubtful if it is not advisable to dispense with them altogether.

26. Nerve changes following thyroidectomy.

Capobianco (*Rif. Med.*, Sept. 1 and 2, 1892; abstract in *Brit. Med. Journ.*, Nov. 26, 1892), from researches on this subject, has come to the following conclusions:—(1) Complete thyroidectomy is always fatal to dogs. (2) The cause of death would appear to be a poisoning of the central nervous system by some substance which

the thyroid is destined to destroy. (3) The temperature of dogs diminishes constantly from the operation until death ; it rises temporarily, however, during the occurrence of convulsions. (4) The nervous system shows important lesions, consisting in circulatory disturbances and special changes in the nerve cells and nerve fibres. (5) The cellular degeneration takes the form of atrophy, vacuolation, and granular degeneration. (6) The cerebellum is specially altered in the region of Purkinje's cell layer ; degenerate changes also take place, however, in the other layers, in the corpus dentatum, and the cord. (7) In the medulla oblongata the nuclei are about equally affected ; perhaps that of the hypoglossal is the most altered, and after this comes the facial, vagus, and the nuclei. (8) In the cord both grey and white substances are affected ; the changes are most marked in the anterior grey horn and the crossed pyramidal tract. (9) Lastly, the spinal nerve roots are not spared from the degenerative processes, although Langhans has made a statement to the contrary.

BACTERIOLOGY IN RELATION TO TREATMENT.

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THE introduction into a Book of Treatment of a special section relating to Bacteriology is an event in itself that may be deemed to call for some remark. It is not unfrequently urged as a reproach to bacteriology that up to the present it has contributed but little to treatment, and certainly far less than there was reason to hope from it. Were it necessary, and did the limits of the present article allow, it would not be difficult to show how undeserved this reproach is. It would be as logical to charge the study of morbid anatomy with having so far had little practical value, on the ground that it had contributed nothing to practical therapeutics. In truth, the bearing which pathological knowledge may have on treatment can seldom be a direct one. And so far as bacteriology is concerned, if it have one merit more than another, it is that, although the youngest branch of that science, it has already, both directly and indirectly, influenced treatment to a degree without parallel in the case of any other branch of pathological science. By its contributions to our knowledge of the nature of infection it has given order where before all was chaos; so that through it we are now acquainted with the actual agents that cause infective disease, the conditions that influence their growth both in the outside world and within the body, the very weapons (chemical substances) they employ, and the disturbances in the body they severally produce.

In other and more direct ways the influence of bacteriology on treatment has been manifest. The whole antiseptic treatment of disease, whether in surgery or in medicine, is the direct outcome of its labours. And if regard be had to preventive medicine—that branch which deals with the prevention of infective disease—it is not possible to estimate how largely it is indebted to bacteriology. As has been stated, however, it is not only in these more obvious ways that the study of bacteriology has had outcome of the most important kind in relation to treatment. To

it we owe the discovery of what, in truth, almost amounts to a new science—that which treats of the manner in which the body protects itself against infective disease, or recovers from it if attacked.

Three stages may be noted in the progress of bacteriological investigation. The first was the morphological one, during which attention was chiefly drawn to the morphological and biological characters of the different organisms. In the second the physiology of the organisms was mainly dealt with—their modes of action in producing disease by means of the products they form. The third stage deals with the manner in which the body reacts to the presence of pathogenic organisms, the agencies it brings to bear in resisting their attack in the first instance, or with which it defends itself after they have gained entrance.

The subject of immunity has, indeed, come to occupy a large portion of the field of bacteriological research; and it only requires a reference to the large mass of new facts with which it has supplied us to recognise how important they are in relation to treatment—if not directly, at least indirectly—in modifying and enlarging our conceptions of the significance and importance of the various phenomena of infective disease, and of the nature and variety of the healing agencies over which the body wields control. And of the many discoveries that have been made in this relation within the past few years, no one is more remarkable than that which relates to the therapeutic properties of blood serum, as first announced by its discoverers, Behring and Kitasato, two Berlin workers, in 1890.

In considering what form the annual review of the progress of bacteriology in relation to treatment, which it is now proposed to give in this place, should take, two methods suggested themselves. The first method was to give a brief summary of the more important researches that had been carried out during the year. In time such a practice may become feasible and desirable. For a first review, however, it was neither: not feasible, since it was obviously impossible within the limits at disposal to give a summary of the whole progress of bacteriological knowledge during the past ten years, and its bearing on treatment; not desirable, since even if this could have been done, many subjects would have necessarily to be discussed, the very terms of which would be unfamiliar to those not already acquainted with the subject. The other more practical method that suggested itself was to select one well-known infective disease—preferably, one with regard to which the fullest investigations had been made, both as regards its nature and the possible means of effectually

combating it—and to discuss the whole subject in relation to it. This seemed in all respects the method that had most to recommend itself, and it is the one that has been adopted. The particular disease that has been selected has been tetanus—a disease which up till recently had not been definitely proved to be an infective disease; with regard to which, however, thanks to a series of remarkable researches carried out by a few observers within the past three or four years, our knowledge is now more extensive, and, at the same time, more exact than could probably be affirmed of any other disease.

1. The treatment of tetanus.

Our present methods of treating tetanus are directed mainly to support the nervous system by means of sedatives—bromides, chloral, and the like—until such time as the poison may perchance become exhausted. Unfortunately, our efforts are not very successful. The mortality of tetanus is a high one. It has been variously stated as ranging from 24 per cent. to as high as 90 per cent. Albertoni, on the basis of 176 cases, gives it as 24 per cent.; a study of the statistics of Italian hospitals from 1882 to 1887 states it as 44 per cent.; and Behring, a German observer, to whose work we owe a new suggested treatment of the disease, places it as high as 80 to 90 per cent. According to Roux and Vaillard, two French observers, who have much interested themselves in the subject, 50 per cent. probably represents more closely the correct mortality from this disease. It is, indeed, difficult to obtain accurate statistics on the point. The gravity of the disease is in inverse proportion to the length of the incubation period; the shorter this is, the more severe and rapid is the course of the disease.

Within the last three years a new method of treatment has been suggested and put into practice, directed not to a support of the nervous system, but to a destruction or neutralisation of the poison circulating in the blood which occasions the convulsive attacks. So far the results of the new treatment cannot be regarded as very successful; indeed, the question as to its efficacy at all is still entirely open. Apart altogether, however, from the place that may ultimately be assigned it, the treatment suggested has certain remarkable features of interest which entitle it at least to careful consideration. In the first place it is based on a series of the most elaborate and beautiful researches, carried out during the past three years chiefly by two Berlin observers, Kitasato, now of Tokio, Japan, and Behring, of the Institute for Infective Diseases in Berlin. The chief outcome of that work has been to direct attention to certain remarkable

therapeutic properties possessed by the blood serum of animals that have been rendered immune to this disease. Their results have recently been confirmed in a lengthy investigation carried out by two French observers of the Pasteur Institute in Paris, Roux and Vaillard.

The new treatment suggested is not the outcome, then, of any empiricism; and if only for the interest of the many facts on which it is based, it deserves something more than a passing consideration. It is proposed, then, here to consider these facts to the degree necessary to enable everyone to judge for himself how far the principles on which the new treatment is based are sound, and, at the same time, to record the degree of success with which the treatment has so far been carried out.

2. Facts relating to tetanus.

Tetanus now takes prominent rank amongst those diseases definitely known to be caused by the action of a specific bacillus.

It was first shown to be capable of transmission from man to animals. The further observation was then made that all the symptoms of the disease could be induced by the inoculation of garden earth into certain animals. Among the many organisms present in such earth, one particular club-shaped bacillus was found by Nicolaier to be constant in its occurrence, and was suspected to be the specific organism of the disease; but for several years all attempts to isolate it failed, and our knowledge of the etiology of the disease remained for the time being stationary.

The difficulty was finally overcome in a most ingenious manner by Kitasato—a worker in Berlin. The organism was isolated, cultivated in pure cultures, and definitely proved to be the one capable of producing the disease in its entirety.

It has a very widespread distribution. Its chief *habitat* is the soil, especially mould and garden earth, and chiefly in the deeper layers. It is “anaërobic”; absence of oxygen is essential for its growth.

When inoculated, the infection does not become generalised, but remains localised. The poisons formed at the seat of infection pass into the blood and produce the general symptoms of the disease.

The chemical nature and action of the poison of tetanus have been carefully studied by Sidney Martin in England, and by Kitasato. As the latter has shown, it is of a very sensitive nature. If carefully dried *in vacuo*, it retains its activity; if dried in the air, at room temperature, it is weakened; while, if dried in a chamber at a temperature a little below body-heat, it loses its activity altogether. It is no less sensitive to the action

of light. Direct sunlight destroys it in a few hours (fifteen to eighteen); exposure to the light at a window, in a few weeks; while if kept in a dark, cool place it retains its full activity, even after the lapse of 300 days.

It is an extremely active poison—more so than any we have yet had acquaintance with. Culture fluid, in which tetanus bacilli have been grown for four to five weeks, and from which the bacilli have been removed by filtration through porcelain, kills mice in doses so small as $\frac{1}{4000}$ part of a cubic centimètre.

3. The action of blood serum on the poison of tetanus.

Certain very remarkable facts have been made out with regard to the action of blood serum on the poison of tetanus. The credit of their discovery we owe to Behring and Kitasato, who first announced them in 1890. They showed that by a method they then described, it was possible to confer complete immunity against tetanus even on the most sensitive animals. So thorough is the protection thus conferred, that animals can tolerate with perfect impunity doses of the poison many thousand times greater than that which proves fatal to an unprotected animal. The blood serum of an animal thus protected is capable on injection of conferring immunity on another. In this way it is possible to render not only mice, rabbits, and guinea-pigs, but also larger animals—such as the horse, sheep, and cow—completely immune to the disease.

If blood serum obtained from such an immune animal be mixed with an equal volume of the fluid containing the tetanus poison, the remarkable fact appears that the poison is almost immediately rendered perfectly harmless. As the result of the immunity, the blood serum has acquired an “antitoxic” power.

4. Properties of antitoxic serum.

The power of such serum in this respect may be judged from the fact that if a sample of poison fatal to guinea-pigs in doses of 0.003 c.c. be mixed with an equal volume of serum, quantities of 2, 3, and 5 c.c. of the mixture can be injected into the animal without causing the slightest symptom of tetanus. It is possible, indeed, to gain a serum of extraordinary antitoxic power. Thus, a horse rendered immune by Roux and Vaillard gave a serum one part of which could render harmless thirty parts of poison.

We do not yet know in what way the serum acts—whether by destroying the poison or by entering into some chemical combination with it. The action of the serum on the poison is instantaneous: so soon as they are mixed together the poison is

harmless. When gradually increasing quantities of the poison are added to the serum there comes a time when the poison is no longer destroyed; a part of it remains free and can give tetanus to animals when injected.

How does the blood acquire this remarkable power? It is not possessed by the serum of the normal animal, nor, strangely enough, is it possessed by the serum of animals naturally immune to tetanus. Thus the fowl does not take tetanus, however large the dose of the poison given. Nevertheless, the blood serum of the fowl, mixed with the tetanus poison, has no action on it even after prolonged contact. It is possible, however, to render the blood of the fowl antitoxic. To this end it is only necessary to inject a strong dose of tetanus poison (30 to 40 c.c.) into the peritoneal cavity. During the three or four days following the injection, the blood is toxic—it can give tetanus to mice on injection. But this character gradually disappears, and when tested fourteen days later, the blood serum is found instead to possess a strong antitoxic power. The power, whatever its nature may be, is resident in the blood serum, as Behring has shown, and not in the blood clot. It is a change induced by the action of the tetanic poison. It is greater the larger the quantity of poison that has been introduced. A point of importance is that it long persists. It might be thought that by repeated bleedings one could rapidly deprive the blood of this power. This, however, is not the case. So that, if once an animal be rendered immune, its blood serum may be relied on to possess this power for a long time, and by injection of a small dose of the tetanus poison from time to time, the antitoxic power of the animal's blood can be preserved indefinitely.

Roux and Vaillard preserve the serum by drying it *in vacuo*, and keeping it in a dry state. Before use it is dissolved in six times its weight of distilled water. Treated in this way, it may be preserved indefinitely without losing any of its power.

5. Treatment of tetanus by serum.

The foregoing facts indicate how readily an animal can be protected against an attack of tetanus. They go even further, for it is this remarkable power of blood serum that Behring and Kitasato have proposed to utilise in the treatment of the disease after it is fully declared.

There are two ways of inducing tetanus experimentally—either (1) by the injection of the poison free from the bacilli, or (2) by inoculation of the bacilli themselves. In the former case the dose of the poison is fixed; in the latter it is quite indefinite, being determined by the activity of the organisms at the seat of

injection. It is the latter only that simulates the condition found in man after injection. Even after the injection of the poison, a certain time (sixteen to twenty-four hours) elapses before the symptoms of tetanus manifest themselves. It is during this period that treatment is most likely to be successful. The question then is, With what rapidity can the blood be made to possess sufficient antitoxic power to render harmless the poison circulating in it? And the experiments of Roux and Vaillard show that even thirty-five minutes after the injection of antitoxic serum into the peritoneal cavity of guinea-pigs, the blood possesses considerable antitoxic properties; and an hour later this power is increased. According to these observers, it suffices to inject into an animal a quantity of serum corresponding to $\frac{1}{345}$ of its body-weight to give the blood a well-marked antitoxic power; moreover, this power persists for several weeks. As soon as it disappears, the animal again becomes susceptible to the poison if injected.

It is thus possible to realise the conditions necessary for a prevention of tetanus. If antitoxic serum can be injected forty to forty-five minutes before the poison, the latter will be destroyed as soon as it reaches the blood. If the two be injected simultaneously, at two different points, the result is also a success, although a more qualified one. A slight degree of tetanus occurs, but this is limited to the limb where the poison has been injected. The disease does not spread, and the animal recovers in due time. But if the serum be injected after the introduction of the poison, the result is much more uncertain. It depends to some extent on the seat of infection. The more remote this is—*e.g.*, the foot—the better is the chance of recovery, even if the treatment be only commenced seven to eight hours later. The important fact, moreover, appears that by using larger doses of serum, and especially of very active serum, treatment is efficacious for a longer time after the injection of the poison.

Animals—and the same, doubtless, applies to man—display very different degrees of susceptibility to the disease. The degree of resistance they offer varies very considerably.

When infection is caused, as is the case in disease, by the inoculation of the bacillus into the tissues, the conditions are very different. The amount of poison, and the rapidity with which it is absorbed, depend on the activity of the bacillus; and this in turn depends on the nature of the environment in which the bacillus finds itself, whether favourable or otherwise. A certain time must always elapse before sufficient of the poison has been formed to produce symptoms. Under the most favourable conditions this must be three days; and it may be, and usually is, much

longer—namely, seven, fourteen, or twenty-one days. There is no more common method of infection with tetanus than by receiving a small splinter of wood under the skin. The effect of treatment in such circumstances deserves, therefore, special attention.

The experiments of Kitasato show that the earlier after infection the treatment is commenced, the less serum is required and the more rapid is recovery.

Roux and Vaillard have obtained less successful results. The possibility of interfering successfully in such circumstances depends on the quantity of serum injected, and the time that has elapsed between infection and treatment. If the infection be slight, treatment may be successful in arresting temporarily the disease; *but the arrest is not permanent unless the focus of infection be removed.*

It is clear, then, that after the disease has fully declared itself, it is not easy to obtain recovery. The serum injected effectively neutralises the poison already in the body, and this must be regarded as an important step taken in advance in treatment. It has no action, however, on the bacilli at the original focus of the disease, and unless these be removed the disease is always liable to recur. To guard against such a contingency it is necessary to continue the injections for eight or twelve days after all symptoms of the disease have disappeared.

6. Treatment of tetanus in man.

The foregoing are the experimental data on which the treatment is based. The following is a brief summary of seventeen recorded cases in which the treatment has already been tried in man.

The first case of a child treated by Kitasato gives little information, as the disease was advanced and the quantity of serum injected very small.

Eight cases observed in Italy were followed by recovery. The serum employed was that of immune dogs, and was prepared by Tizzoni and Cantani. The cases were slight, the first symptoms not occurring till the eighth to fifteenth day after receipt of the wound. They cannot therefore be regarded as proving definitely the value of the treatment, as it is precisely in such cases that recovery takes place without any treatment, or with the older methods of treatment.

Two cases reported by Renon in France. Both died, notwithstanding that the one received 57 c.c. and the other 80 c.c. of a very active serum.

In his monograph on "Serum-Therapeutics," Behring, the

originator of the treatment, refers to ten cases treated, but he only gives the details of one. It was a case of moderately severe tetanus. The first symptom was noted on the eighth day after the injury, and on the fifteenth day there was trismus. Treatment was commenced on the twenty-second day, 66 c.c. of the serum being injected subcutaneously in four places. The following day the condition was unchanged; there were opisthotonos and periodic convulsions; 50 c.c. were injected. The next day there was distinct improvement; 45 c.c. injected. The next day there was further improvement; trismus less marked, opisthotonos almost gone; two injections of 50 c.c. From this time progressive improvement occurred. Six days later the sweating, which had been very marked throughout the treatment, had ceased; the trismus and contracture of muscles of back and legs had disappeared; but rigidity of the wounded hand and forearm persisted for a week longer. In all, 250 c.c. of very active serum were injected; and the result at least proves the harmlessness of the injections.

Seven cases are recorded by Roux and Vaillard in their monograph on the subject published early in the present year.

1. Child aged eleven; extraction of a tooth; incubation, fifteen days; duration of disease, six days; death. Treatment commenced on fourth day. Quantity of serum injected, 147 c.c.

2. Man aged forty-two; incubation, eight days; duration of disease, five days; death. Treatment commenced on fourth day. Quantity of serum injected, 108 c.c. An hour before death the blood was found to have a very considerable antitoxic power. The injection of 108 c.c. has thus sufficed to neutralise all the poison in the blood, and even to render it slightly antitoxic.

3. Aged fifteen and a half; incubation period, five days; duration of disease, two days; death. Treatment commenced twelve hours before death. Quantity injected, 20 c.c.

4. Man, twenty-seven; incubation period, eight days; duration of disease, five days; death. Treatment commenced thirty-six hours after onset of symptoms. Quantity injected, 402 c.c. At the time of death the blood was highly antitoxic.

5. Gardener, twenty-three; incubation period, fourteen days; duration of disease, three days; death. Treatment commenced on second day of disease. Quantity injected, 247 c.c. The blood was found to possess antitoxic power from the second hour after the injection.

6. Aged twelve; incubation period, fifteen days; duration of disease, thirty days; recovery. Treatment commenced on third

day. Quantity injected, 265 c.c. Antitoxic power conferred on the blood from the seventeenth hour onward.

7. Aged twenty-two; incubation period unknown; duration of disease, thirty days; recovery. Treatment commenced on seventh day. Quantity of serum injected, 300 c.c.

In all these cases the serum employed was very active, and the quantities injected were, as will be seen, very considerable.

The object aimed at by Roux and Vaillard was to render the blood antitoxic as quickly as possible, and the result of their examination showed that for a man of average weight, 100 to 150 c.c. of serum sufficed to confer a considerable antitoxic power on the blood. But this did not suffice to arrest the disease; the patients died of tetanus, notwithstanding that their blood was capable of destroying the tetanus poison. It is to be noted that most of the cases described by these two observers were very severe; and it is perhaps, therefore, not surprising that they seemed in no way influenced by the treatment. The two cases that recovered were on the other hand milder, and were precisely of the character that recover without treatment. It is difficult then, as Roux and Vaillard admit, to say what share the injections took in the recovery.

The question arises whether in the cases that proved fatal, treatment would have been more successful if it had been commenced earlier. Notwithstanding the carefully impartial and critical attitude they take up throughout the whole of their work, Roux and Vaillard answer this question in the affirmative. In spite of the limitations which apparently surround its use, they conclude that the employment of antitoxic serum is at the present time the only rational treatment of tetanus. It is not only harmless in itself; but it certainly destroys the poison circulating in the blood, and to this important extent is therefore always useful. The course they recommend is as follows: Excision of the wound and injection at once of 100 c.c. of active serum. Next day and the following day repeat the injection of 100 c.c., and continue it daily so long as any symptoms last. The treatment has also, as they point out, a sphere of usefulness in the prevention of the disease. In small doses it is an absolutely safe and certain preventive, and might with advantage be used in cases of severe wounds likely to be followed by tetanus.

PUBLIC HEALTH AND HYGIENE.

BY PROF. W. H. CORFIELD, M.A., M.D. OXON., F.R.C.P.,

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1. Cholera.

Last year's visitation left innumerable cholera foci upon the Continent. The escape of the United Kingdom was solely dependent upon the prompt and energetic action of our Public Health administration ; and it remained for them this year to see if the same machinery of preventive medicine, kept at work with the same devotion and zeal by those who are responsible for its working, would, in the face of a probable increased incidence on the Continent, be as happy in its results as it proved to be in the previous year, when it will be remembered no British subject within the islands was attacked by this disease. Unfortunately the efforts were not crowned with the same measure of success as from the experience of the previous year we might justly have expected ; for in the face of a somewhat less direct danger threatening from the Continent, cholera did succeed in gaining a limited and precarious foothold upon British shores.

Cholera is a disease which varies in its incubation period very materially ; and although it is uncommon for more than forty-eight hours to elapse after infection before the appearance of symptoms, yet symptoms may be delayed for five days or even longer ; the disease, moreover, may assume in some cases a very mild type, and if one such case succeeds in eluding the vigilance of those who are responsible for the "first line of defence," it is none the less likely that a severe case of the disease may spread its infection ; indeed, there are facts which prove that a patient apparently quite convalescent may yet furnish the means of disseminating the disease.

The most important point in cholera prevention is to have the means of quickly diagnosing the disease in the earliest possible stage of the outbreak ; and a prompt bacteriological examination should be undertaken in every case of choleraic diarrhœa when cholera is abroad. The milder cases ("cholerine"), which so generally precede cholera outbreaks, are in all probability true Asiatic cholera, and everything is to be gained by treating them as such, and carefully submitting either the rice-watery stools, or,

after death, about ten inches of the lower ileum, to a searching biological examination. With regard to the *vera causa* of the disease, there are points which are still *sub judice*, but the vast preponderance of opinion remains in favour of the vibrio of Koch being the specific virus which, under favourable local conditions, and mainly through the agency of polluted water, conveys the disease. There is little, if any, true evidence to support the theory of aërial transmission; and additional proof has been added to the large stock already in our hands, that cholera is almost entirely a water-borne disease, by the Report upon the Hamburg epidemic by Renicke, the head of the Health Department of that port. He points out that the explosive manner in which the epidemic spread, and the fact that the cholera was restricted to those parts which derived their water from the ordinary town supply—areas and houses with other and independent supplies escaping—demonstrates the important part which the water-supply played in the epidemic. Koch, the discoverer of the comma bacillus, has also furnished us with a rapid means of detecting its presence. This he has recently published in the *Zeitschrift für Hygiene*. He points out that if, under suitable precautions, a microscopic examination of the mucous threads and flakes shows the cholera vibrios arranged in groups, in which the single vibrios run parallel like a shoal of small fishes following one another in a stream, he considers the appearance so characteristic that a diagnosis of Asiatic cholera may be safely made. It is not, however, in every case of true cholera that this characteristic appearance is present, so that it is sometimes necessary to submit to the delay entailed in making cultivation experiments. Another speedy test has also been devised by Dunham, of New York, by means of which, in about six hours, additional corroborative evidence of the presence of the vibrio may be obtained. He suggested a 1 per cent. peptone solution, with $\frac{1}{2}$ per cent. of sodium chloride, as a medium in which the vibrio in its growth would reduce nitrates and form indol; so that when sulphuric acid or hydrochloric acid is added a red reaction ensues. He found that the vibrio grew in this medium with exceptional rapidity, far exceeding that of the other organisms to be found in the intestinal track, and in from eight to ten hours colonies are recognisable on agar plates.

In the meantime Haffkine's anti-choleraic treatment is being largely tested in India, and apparently with favourable results. In this connection reference must be made to an important piece of destructive criticism which Klein (*Trans. Path. Soc.*) launched against the treatment in the early part of the current year. He

concludes from his experiments that protection against one "intracellular poison"—by which he refers to the organisms themselves and their contained chemical substances—protects against all others; but that the protection does not extend to the specific poison produced by the organism in its nutritive medium. He finds that an animal immunised against Haffkine's "virus exalté" (essentially an intracellular poison) will succumb to liquefied gelatine cultures of comma bacilli injected intraperitoneally. The question is one of the greatest importance, and so long as it remains unsettled it seriously discounts the value of Haffkine's work.

The mortality from cholera upon the Continent of Europe has been heavy during the past summer, and more especially has this been so in Russia and Hungary. However, with the exception of a few isolated cases elsewhere (*i.e.*, Derby, Keighley, Rotherham, and London), the towns of Hull and Grimsby have borne the brunt of the cholera attack upon English shores. At Hull the disease first broke out in August, and, in spite of the most energetic measures taken by the sanitary authorities, the disease has accounted for about a dozen deaths. The precautions taken were most thorough, and, in addition to what may be termed the ordinary machinery of preventive measures against cholera, extra medical assistance was enlisted; an ambulance staff was kept upon duty night and day, so that their services were always available for removing notified cases which admitted of removal; and the sanitary offices were also kept open till after midnight. Immediately upon removal all articles likely to have been infected were at once disinfected or destroyed; the contents of the privy were removed and cremated, the interior disinfected and lime-washed, and any drains flushed with water and disinfectants; disinfectants were distributed in the neighbourhood of the outbreak; all cases of choleraic diarrhœa were requested to be announced on the usual notification form; there was gratuitous distribution of diarrhœa mixture and disinfectants at the various police and fire stations; complete isolation accommodation was provided, and a supply of tents was kept in readiness.

A number of cases also occurred at Grimsby. The first one which Klein pronounced true cholera took place at the end of August; but, prior to this, for at least a month the diarrhœal mortality had considerably increased, and many cases had arisen which, from their virulence and clinical features, were indistinguishable from Asiatic cholera. Here again the extra precautionary measures were most thorough and on the lines detailed above. In the metropolis, among the deaths ascribed to

cholera, in three only has the cholera vibrio been discovered by Klein—*i.e.*, one in Westminster, one in Fulham, and another in Kennington.

Great precautions were taken in London in view of a possible outbreak of cholera. Apart from those taken by the port sanitary authority, under the advice of Collingridge, the various districts were sub-divided into sub-districts, and arrangements made with medical men for attendance, and with chemists for the supply of medicines; beds at hospitals, infirmaries, etc., were arranged for, and ambulance stations provided; so that London is at the present moment better prepared to resist an attack of cholera than it ever was before.

2. Water filtration.

Efficient sand filtration very materially diminishes the risk of contamination by disease organisms. During the year Prof. Koch has written a valuable essay upon this subject, in which his conclusions are:—

(1) That the rapidity of filtration ought never to exceed 100 millimètres an hour, and every filter should be regulated accordingly.

(2) While in use, the water issuing from every filter bed should be daily submitted to a bacteriological examination.

(3) Filtered water which contains more than one hundred living microbes in the cubic centimètre ought not to be allowed to pass into the reservoir.

3. Incubation-period of infectious fevers.

The Report of the Committee of the Clinical Society of London upon periods of incubation and contagiousness was issued in the early part of this year. The following table will serve to show the result of the investigations as to the duration of the incubation periods of the diseases mentioned:—

	Minimum number of days.	Most usual number of days.	Maximum number of days.
Scarlet Fever	1	2	7
Diphtheria	2	2	7
Influenza	1	3	5
Measles	4	10	14
Variola	9	12	14
Enteric Fever	5	12	23
Varicella	13	14	19
Rubeola	8	18	21
Mumps	12	19	25

The last column, which deals with the maximum number of days that may be consumed in incubating the different diseases, gives a valuable idea of the time during which it may be necessary to keep apart those who have been exposed to infection.

Scarlet Fever of a mild type has been very prevalent in London during the year, so much so that the accommodation at the Asylums Board hospitals has not nearly sufficed for the number of cases reported. There have not been many more deaths than the average, so that were it not for compulsory notification of the cases, the sanitary authorities would not have known that it was unusually prevalent.

Diphtheria, on the other hand, has been exceedingly fatal, having caused no less than 2,808 deaths in London during the twelve months ending September 30, 1893, or *almost twice as many as* the deaths from scarlet fever during the same period.

There is as yet no satisfactory explanation forthcoming of the steady increase of diphtheria in the urban districts. Undoubtedly defective house drainage and absence of those conditions which aim at securing dryness of the dwelling, defective sewer ventilation, infected milk, direct personal infection—especially by school attendance—and the difficulty of diagnosing and dealing with slight attacks, all conduce to the origin and spread of this disease. The total annual deaths admittedly due to this cause in England and Wales now number about 6,000, as opposed to some 2,000 to 3,000 twenty years ago; and still it goes on increasing. The question of the animal origin of the disease is growing in importance, and may ultimately be found to account for more than most of us at present suspect. Cows have, most certainly, the power of distributing the infection through the agency of milk; this has occurred in circumstances which preclude the possibility of any human infection having gained access; and household pets, such as cats and canaries, undoubtedly suffer from a precisely similar disease. It seems that further preventive measures directed against the bovine disease will prove productive of good, and, among the host of other measures which will occur at once to the reader, the prompt isolation and treatment of all those suffering from throat ailments, however slight, when a diphtheria epidemic threatens, must be regarded as a powerful means of staying its spread, for many of the milder throat affections, though they do not present the appearance of true diphtheria, nor induce the same symptoms, certainly have the power of communicating that disease to others. The difficulty is to get knowledge of all of these mild cases; but the majority can be readily discovered by visiting the

homes of children who are absent from the different schools in the district.

4. Small Pox.

A Special Report to the Parliamentary Bills Committee of the British Medical Association, published in the *Journal* during last May, upon the value of vaccination against small-pox from data obtained from thirty-two districts, states that the death-rate among the unvaccinated cases was 8·6 times greater than in the vaccinated patients. A great deal of valuable information was also presented in the Report upon the subject of the cost of small-pox epidemics. Small-pox statistics having reference to the town of Leicester have always an additional interest, coming as they do from a great anti-vaccination centre; and we are indebted to Priestley, the medical officer of health, for an instructive report upon 146 cases of small-pox in the borough. He shows that in the first five years of life the unvaccinated suffered fifteen times in excess of the vaccinated; in the next five years the unvaccinated suffered forty times in excess of the vaccinated, whereas in the subsequent five years the unvaccinated had an excess of two and a half times.

After the third quinquenniad it is the unvaccinated who come off best, as might have been expected in the absence of revaccination. It simply serves to demonstrate a well-known fact, that previous attack from small-pox renders greater immunity from subsequent infection than infant-vaccination does; and it further serves to demonstrate the necessity and gain of gratuitous revaccination at from ten to fifteen years.

The hospital records of Manchester show that during the twelve months ending March 25 of the present year there were 406 cases of small-pox, only one of which occurred in a revaccinated patient; and the rate of mortality among the unvaccinated sufferers was more than four times that of the vaccinated.

5. Epidemic diseases.

The Milroy Lectures this year were delivered by Whitelegge upon the subject of Changes of Type in Epidemic Disease. He sums up as follows:—

(1) Epidemic prevalence may be brought about either by increased potency of the disease itself or by increased mechanical facilities for diffusion. (2) Epidemics of the latter class, including water epidemics, milk epidemics, and, as a rule, seasonal prevalence, are attended with lowered case mortality, because the conditions under which they occur imply a lessened average susceptibility, and therefore a less severe average attack. (3) Underlying all great epidemics there is a change of epidemic type, a

change in the quality of the disease itself. (4) There is evidence of a like change on a smaller scale in most if not all epidemic diseases, the intensity rising and falling at intervals which are not necessarily uniform for the same disease, and are very different in different diseases. (5) Whether on the larger or smaller scale, the intensification is marked by greater severity of attack, greater power of overcoming comparative insusceptibility, and greater power of epidemic diffusion. (6) While some diseases are capable of rapid or even abrupt changes in intensity, others are not; and this distinction serves to mark off broadly two principal groups: those which are mobile and those which are comparatively constant in type. (7) The first group—that of diseases which are capable of most rapid change in type—includes those which are most nearly allied to saprophytic life, most dependent upon filth conditions, most able to infect soil, water, milk, and lower animals, most liable to relapses, and least protective. (8) Diseases of this class may be highly modified, and some of them may assume and maintain a form so slight that their true character is unrecognised. (9) Under favourable conditions, their intensity may slowly or suddenly increase, giving rise to epidemics of severer type. (10) Among diseases of this class, an epidemic normally begins and ends with the milder forms, the more severe attacks occurring at the time of greatest prevalence. The severity and prevalence rise and fall together. (11) In the second group, among diseases of more fixed character, extreme modification of epidemic type does not occur; but individual attacks may be extremely mild, owing to high resistance. (12) Among such diseases there is evidence of a rise and fall of intensity if the epidemic course be traced for a term of years, perhaps covering several minor epidemics. (13) In these brief outbursts of diseases of more constant type there is little, if any, change of intensity comparable to that of the mobile class, the prevalence being determined and controlled mainly by external conditions, but the type being that of the prevailing phase of a broad cycle.

6. Phthisis.

The amount of consideration and discussion given to the subject of tuberculosis and its communicability during the past year bears testimony to the increasing concern with which sanitarians are viewing the altogether restricted and inadequate measures which are at present taken to check its spread. The chain of evidence may be held to be complete upon the subject of the infectiousness of this disease, and there are now but few who do not believe that it arises either directly or indirectly from a preceding case. The special preventive measures at present employed

to stay the ravages of this disease are limited to a rigorous condemnation of tuberculous meat in a few isolated districts, and a far less rigorous condemnation in some others; for it is now a generally accepted fact that the flesh of animals suffering from even incipient tuberculosis is capable of conveying the disease to invalids, children, and others who eat it in a raw or partially cooked state.

The past year has seen a marked extension of the crusade against this, in a large measure, preventible disease, and there is at present a strong desire among several prominent health officers to make phthisis one of those diseases the notification of which is compulsory. Desirable as this is, and although it is the logical issue to the now accepted fact that the disease is infectious, yet it is a measure which must be first seriously viewed in the light of the beneficial results which are likely to accrue from it. There is unquestionably a great gain to public health from the notification of phthisis, if only it should lead to inspection of the premises and advice to inmates—as by printed slips—to caution them against *unduly* exposing themselves; to advise them to treat the sputum as a virulently infectious product, to be collected carefully and disinfected promptly and removed.

There is no doubt that there would be a great gain in providing hospitals for those consumptives who will, in the later stages of the disease, voluntarily avail themselves of them; and that, in addition, much can be done to reduce further the phthisis rate by general improved sanitation, and by educating the public as to the infectious nature of the disease, and the precautions which are necessary to enable them to resist infection; and notification would be of great service, and would justify its cost, as a means of disseminating this knowledge among those to whom it is of special value, and also to enable the sanitary authority to satisfy itself that the precautions recommended were carried out.

7. Vital statistics of England and Wales.

The birth-rate for the first quarter of the year was 31·5 per 1,000, an amount which was 1·1 below the mean of the ten preceding first quarters; and the rate for the second quarter was 31·7, which was 1·0 below the mean referred to.

The number of deaths from small-pox reached the high figures of 377 and 519 for the first and second quarters respectively, as against 76 and 86 for the first and second quarters of the previous year. The mortality of infants under one year was equal to a rate of 137 deaths to every 1,000 births registered for the first quarter. This is 9 per 1,000 below the mean proportion in the ten preceding first quarters. In the second quarter the rate was 135, or 7 per

1,000 above the mean proportion of the ten preceding second quarters. The "rural" and "urban" death-rates for the first quarter were 18·4 and 20·4 respectively, and for the second quarter 16·4 and 18·7, all somewhat below the mean.

DEATH-RATES PER 1,000 FOR THE FIRST TWO QUARTERS OF 1893.

	Rates of first quarter.	Mean of ten preceding first quarters.	Rates of second quarter.	Mean of ten preceding second quarters.
General Death-rate .	19·70	22·00	17·90	19·10
Zymotic Death-rate .	1·60	1·87	1·98	1·80
Measles	0·42	0·44	0·49	0·52
Whooping-cough .	0·36	0·55	0·31	0·49
Diphtheria	0·25	0·18	0·24	0·14
Scarlet Fever	0·20	0·27	0·21	0·22
Diarrhoea	0·19	0·20	0·52	0·24
"Fever"	0·13	0·20	0·14	0·17

8. Registration of births and deaths.

A Parliamentary Return issued in 1891—which does not refer to Scotland or Ireland—shows that in the previous year no less than 17,335 "stillborn" children were interred, and of these, 4,569 were buried without any medical certificate of the cause of stillbirth. Rentoul very properly insists that all stillborn children should be inspected and registered, and that the certificate of stillbirth should give data regarding the sex, age, and legitimacy of the children, as well as the age, name, and nationality of the parents; and he would make the term "stillborn child" include all infants who have attained the fourth month of intra-uterine life. There is no doubt but that the present slipshod manner of dealing with these cases is responsible for a considerable number of children being disposed of as stillborn which have died from violence or exposure; and it is not easy to exaggerate the importance which the subject has, as a matter either of preventive medicine, or of vital statistics, or of medical jurisprudence. An important Report of a Select Committee which sat upon the subject of Death Certification has recently been published, and the following is a summary of the principal recommendations made by the committee:—

(1) That in no case should a death be registered without production of a certificate of the cause of death signed by a registered medical practitioner, or by a coroner after inquest, or in Scotland by a Procurator Fiscal. (2) That in each sanitary district a registered medical practitioner should be appointed as public

medical certifier of the cause of death in cases in which a certificate from a medical practitioner in attendance is not forthcoming. (3) That a medical practitioner in attendance should be required, before giving a certificate of death, personally to inspect the body ; but if, on the ground of distance or for other sufficient reason, he is unable to make this inspection himself, he should obtain and attach to the certificate of the cause of death a certificate signed by two persons, neighbours of the deceased, verifying the fact of death. (4) That medical practitioners should be required to send certificates of death to the registrar, instead of handing them to the representatives of the deceased. (5) That a form of certificate of death should be prescribed, and that in giving a certificate medical practitioners should be required to use such form. (6) That it should be made a penal offence to bury or otherwise dispose of a body, except in time of epidemic, without an order from the registrar stating the place and mode of disposal, which order, after it has been acted upon, should be returned to the registrar who issued it. (7) That it should be made an offence to retain a dead body unburied or otherwise legally disposed of beyond a period not exceeding eight days, except by permission of a magistrate. (8) That the practice of burial in pits or common graves should be discontinued. (9) That stillbirths which have reached the stage of development of seven months should be registered upon the certificate of a registered medical practitioner, and that it should not be permitted to bury or otherwise dispose of the stillborn until an order for burial has been issued by the registrar. (10) That, subject always to the discretion of the Crown Office, the result of precognitions taken by the Procurators Fiscal in Scotland, or the precognitions themselves, should be communicated to the representatives of the deceased when application is made for the same.

Reverting to the subject of preventible infantile mortality, the report presented to the Parliamentary Bills Committee in the early part of the year by Reid furnishes some startling evidence of the results of female factory labour upon the infant mortality. In those towns in Staffordshire where married women are largely employed in factories, the infant death-rate is 28 per cent. higher than in towns precisely similar in all other respects save the employment of *married* women. The maternal neglect of their offspring which this employment of married women entails, and the deprivation of children of what is their natural food, have for some time been recognised as the cause of the excessive infantile mortality in certain areas of England. In public health matters, however, as in most others, it is less easy to find a remedy

than to prove the necessity for it. In this case the establishment of day nurseries or crèches by the local authorities would do some good. Certain it is that action of some sort is demanded in the name of those who are helpless to protect themselves.

9. Deaths by poisoning.

The number of deaths caused by poisoning shows annually a tendency to increase, and not the least interesting and important of these are those which come under the head of "food poisoning." The cause of death must not always be ascribed to ptomaines or toxins furnished by the putrefactive decomposition of the article consumed, for in some instances death was undoubtedly due to a true infection by virulent bacilli. Then again it appears that the article consumed may act mechanically as an irritant upon the gastro-intestinal mucous membrane of some people—quite apart from the presence of ptomaines or toxins or specific organisms. Our knowledge and grasp of this subject is increasing, and the effect will be to diminish materially the number of deaths from poisoning which figure in the Registrar-General's annual report as those in which the nature of the poison was not ascertained.

SUMMARY OF THE THERAPEUTICS OF THE YEAR 1892-93,

CHIEFLY IN REFERENCE TO NEW REMEDIES.

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AMONG the new comers to the ranks of therapeutics furnished by organic chemistry during the past year, we do not find many whose claims demand serious attention. The incessant clamouring for new drugs is to be deprecated, and fortunately there seems to have been a healthier tendency of late to study more carefully the qualities, for good or for evil, of some of the claimants that have been brought before us within recent times.

In reference to older drugs, one of the best contributions that has been made of late to rational therapeutics is contained in Dr. Stockman's paper on the Treatment of Chlorosis by Iron and some other drugs. (*Brit. Med. Journal*, April 29, May 6, 1893.)

A most interesting topic, and one upon which our knowledge is sadly deficient, is the investigation of the connection between the chemical constitution and physiological action of remedies. It is true that already we have some clues, and in the class of neurotic remedies especially we hope for increasing light in this direction. May we not look forward to apprehending more clearly *how* certain good and desirable effects are linked to chemical structure, and *how* certain ill effects may be accounted for or guarded against?

Nencki and Boutmy (*Arch. f. exp. Path. u. Pharm.*, 1892) have studied a special case of this relationship, and they have shown that certain poisonous "aromatic" compounds become relatively non-toxic when we introduce into their molecule the carboxyl (COOH) group, which is saturated with oxygen, and is not reducible in the organism. Similarly with the sulphonic group. As striking examples, we may point to the energetic poisonous qualities of phenol (carbolic acid) as compared with its carboxyl

derivative, salicylic acid. Or again, pyrogallol (pyrogallie acid) is a highly toxic substance, whereas its carbonic acid—viz., gallic acid—is non-poisonous, and has neither antipyretic nor antiseptic action.

The substitution of the amide (NH_2) group for H does not have a similar effect; witness phenocoll, which is the amide of phenacetin.

But although we do know the chemical constitution of a good many important drugs, we cannot yet go very far, and we may well take to heart the criticisms, if we do not entirely adopt the conclusions, of Eichengrün, who recently gave an address upon this subject to the Chemical Society of Aix-la-Chapelle. Antipyrin and antifebrin, which are chemically slightly related, produce similar effects upon the animal organism; while on the other hand bodies of closely related chemical constitution are sometimes very different in their physiological action. Moreover, slight chemical alterations—*e.g.*, homologues, substitutions, etc.—are accompanied by very considerable differences in physiological action. No doubt in inorganic chemistry the action of all compounds of the same metal (K, Hg, Fe, Zn) is essentially similar one with another. But in the living organism, and with complex drugs, we must take into account all the determining conditions. For example, physical properties—*e.g.*, solubility; and the disturbing chemical action upon the drug of various substances in the organism—*e.g.*, albumen. Sometimes compounds, capable of resisting in a high degree chemical influences outside the organism, readily break up under the influence of vital processes, and *vice versâ*. (*Pharm. Journal*, July 1, 1893.)

In studying the physiological action of chemicals we ought first to be sure of their identity, purity, and liability to change. This is often a difficult question in the case of the many complex synthetic products which have invaded us, and for whose purity we are obliged to rely upon the reputation of the firm which produces them.

In the simpler case of chloroform we note with satisfaction the inquiries as to the existence of impurities in it, and as to the possible effect of these upon its physiological action. It is reassuring to know that the amount of these impurities is very small, and does not seriously affect the administration of chloroform for anæsthesia. ("Year-Book," 1893, p. 450.)

It has also been conclusively proved that absolutely pure chloroform quickly (within one or two hours) spoils by exposure to light in presence of oxygen, whereas the addition of a minute proportion of alcohol—1 per cent. or less—has, as Squibb first

showed forty years ago, a marked effect in retarding injurious change, and in rendering the deleterious products innocuous. Spoiled chloroform is liable to contain HCl, free Cl, and carbon oxychloride, COCl_2 (phosgene gas). (*Pharm. Journal*, March 25, June 10, 1893.)

ANTISEPTICS, ANTIPYRETICS, ANALGESICS.

The "fever" of demand for new antipyretics has apparently cooled down under the free exhibition of them to which the profession and the public have been subjected; and the ardour of clinical experimentation has been further abated by the discovery of the dangerous qualities which many of these drugs were found to possess.

Thus Schmitt has ascertained that all the aromatic drugs used as antithermic remedies produce, in variable degree, changes in the blood, consisting in the conversion of oxy-hæmoglobin into methæmoglobin, a diminution of the "respiratory capacity" of the blood, and even destruction of the red corpuscles. These changes vary in intensity with the nature and dose of the drug studied, but for each drug are directly proportional to the degree of reduction of temperature produced. They may be roughly divided into the following groups: (1) Those which, with a medium dose only, fix the oxygen more firmly to the hæmoglobin—antipyrin, phenacetin. (2) Those which in moderate doses produce simple intracorpuseular methæmoglobinæmia—aniseic acid, thallin, antithermin, kairin, exalgin, methacetin, acetylamidophenol. (3) Those which in moderate doses, especially if repeated a few times, produce methæmoglobinæmia with destruction of corpuscles—acetanilide, benzanilide, formanilide, methylformanilide, pyro-din. (*Brit. Med. Journal* [Epitome], Oct. 15, 1893.)

But the thirst for new antiseptics is not yet assuaged, and a crowd of new compounds, or modifications of older ones, has been put forward. Of many of these the time is too short or the evidence too slender to justify more than the briefest mention.

Thiocamf.—The use of sulphurous acid (SO_2) as a disinfectant has been long known, and Duffey invites attention to a liquid termed thiocamf, which has been patented by Professor Emerson Reynolds. It is a compound of SO_2 gas with camphor and other substances. A six-ounce bottle of thiocamf will give off about 1,250 c.i. of SO_2 gas when exposed to the air. (*Dubl. Jour. Med. Sci.*, May, 1893.)

PHENOLIC COMPOUNDS.

Creolin has not gained much in popularity during the past year, but some surgeons still prefer it as an antiseptic.

Lysol ("Year-Book," 1893, p. 455) has been largely used abroad. It is readily soluble, fairly active, and very cheap. I have seen the urine become dark red after irrigation of an operation wound (renal abscess) with lysol.

Saprol is a cheap new disinfectant for hygienic purposes. It is a dark-brown oily liquid, and is composed of crude cresols dissolved in excess of petroleum hydrocarbons. Hence it is inflammable—a serious drawback—and it is not adapted for surgical practice.

Solutol is an *alkaline* solution of cresols, and not so well suited for surgical dressings.

Solveol is a *neutral* cresylic liquid, soluble in water in all proportions, and devoid of the greasiness which creolin and lysol exhibit. For surgical dressings a $\frac{1}{2}$ per cent. solution is used. (Squibb, *Ephemeris*.)

Guaiacol, the chief constituent of beech-wood creasote, has been in considerable demand, and appears to be of undoubted service in the treatment of pulmonary tuberculosis. The benzoate, salicylate, iodide, and carbonate, especially the last, have all found their use in individual practice (Squibb; *Ephemeris*). The results obtained in the treatment of pulmonary phthisis by hypodermic injections of guaiacol and iodoform, in combination and separately, are not encouraging, and this method does not seem promising. (*Brit. Med. Journal* [Epitome], Jan. 28, 1893, from *Gazz. degli Osp.*)

Naphthol (cf. "Year-Book," 1892, 1893).—The form known as β -naphthol has been in use, both internally and externally, for more than a decade. Within the last year or two its isomer, α -naphthol, has also been recommended as an antiseptic. It is stated to be more soluble and more efficient than β -naphthol, and is less poisonous, but more irritant locally.

Asaprol (not to be confounded with saprol) is the calcium salt of sulphonic β -naphthol. It is a white powder, very soluble in cold water. Incompatible with alkaline iodides, sulphites, and most alkaline salts, Stackler and Dubief report favourably of it in influenza, acute rheumatism, tonsillitis, and some other affections. Dose, 2 grammes the first day, and increased gradually up to 6 grammes, to be again reduced when the temperature is lowered. It is well tolerated by the organism,

and is borne when sodium salicylate cannot be taken. (*Brit. Med. Journal* [Epitome], Nov. 19, 1892, from *Bull. Gén. de Thér.*)

Resorcin—a diatomic phenol—has steadily increased in favour, and has given excellent results in the treatment of diarrhoea of children, in the various forms of gastritis, and in gastric ulcer. As a local germicide and stimulant it is very efficient in tubercular and other forms of ulceration, and in pharyngitis and chronic rhinitis. (Squibb, *Ephemeris*.)

SALICYLIC DERIVATIVES.

Agathin, a new compound of salicyl aldehyde with α -methyl-phenylhydrazin. Recommended by Rosenbaum in neuralgia and rheumatic affections. Dose, 5-10 grains, two or three times a day. (*Ther. Monatsk.*, Jan., 1893.)

Malakin, a salicylic derivative of p-phenetidin. Given by Jacquet in 74 cases, and found to be valuable as an anti-rheumatic and antipyretic. Dose, 0.5-1 gramme, in wafers. Acts slowly and gradually. (*Ther. Monatsk.*, Oct., 1893.)

Salophen (*cf.* "Year-Book," 1893, p. 454) has attracted some attention as a substitute for salol. It is acetyl-amido-salol.

In acute rheumatism it has been found useful by several observers (Flint, Hare, Koch, Caminer, Guttmann), and is to be preferred to the salicylates as being tasteless, unirritating, and free from depressing effects. Dose, 3-5 grammes a day, in powder. Also used in neuralgia and sciatica (Lutze). Decomposed by the pancreatic juice into salicylic acid and acetyl-amido-phenol. It is rather costly. (*Ther. Monatsk.*, Oct., 1892; July, 1893.)

Salol has gained ground, and has proved itself an efficient antiseptic. **E. Mansel Simpson** advocates its use in some abdominal affections. For example, in "bilious" flatulence attended with pain, he gives 4-5 grains of calomel, followed in one or two hours by 10 grains of salol, repeated every four hours, and finds this plan to act like a charm. He likewise finds salol very valuable in acute diarrhoea, and in enteric fever for deodorising the evacuations. (*Practitioner*, Aug., 1893.)

BASIC COMPOUNDS.

Analgen (Spiegelberg, *Münch. med. Wochen.*) is a synthetical derivative of quinolin, and enjoys a portentously long chemical name and formula which it is unnecessary to reproduce. It is represented to be a safe and efficient drug, similar in action to antipyrin, and a number of medical men have tried it in Germany

with encouraging results. It is supplied in 7-grain tablets, and in elegant wafer cachets, each containing 7 grains. The maximum dose is 45 grains daily.

Phenocoll, an ally of phenacetin (*cf.* "Year-Book," 1892; 1893), has received increasing attention during the past year. It promises best in rheumatic and neuralgic affections.

Antipyrin has been partially pushed aside by the introduction of several of its derivatives or allies which possess similar, and perhaps superior, properties. Toxic cases from its use have been numerous—*e.g.*, **Guttman** reports a case in which the resultant symptoms resembled those of algid cholera. (*Brit. Med. Journal* [Epitome], May 6, 1893.)

Formanilide. (*See Diseases of Nervous System*, p. 84.)

Thiuret (*Répertoire de Pharmacie*, April 10, 1893), a new antiseptic, with the formula $C_8 H_7 N_3 S_2$, possesses the property of readily yielding its sulphur molecules in a nascent condition. On this depends its value as an antiseptic. It is a crystalline powder, almost insoluble in water, sparingly soluble in alcohol and in ether, and having feeble basic properties. Treated by alkalis, thiuret gives up sulphur and forms the ammoniate of phenyldithiabiuret and aniline. Heated to $105^{\circ} C$. in a closed tube, the salt decomposes, yielding sulphur, carbonic dioxide, ammonia, sulphuretted hydrogen, and the amyde of methylene, amido-phenylmercaptan of Hoffman. **F. Blum**, of Frankfort, describes thiuret as an active bactericide. He employed the hydriodide, chlorhydride, borate, and para-sulphophenate; the last he considers the most suitable for therapeusis; it is a yellow, crystalline powder, with a faint odour, but of an intensely bitter taste, soluble in water in the proportion of three to four parts in a thousand; insoluble in alcohol, ether, and oil. Administered internally it provokes purging. (*Dubl. Jour. Med. Sci.*, 1893.)

Tolypyrin (para-tolydimethyl-pyrazolon), which has an elaborate chemical formula, is introduced as a new antipyretic remedy, cheaper than antipyrin. It occurs as colourless crystals of a very bitter taste; it is soluble in ten parts of water, readily soluble in alcohol, and almost insoluble in ether. Like antipyrin, its aqueous solution is coloured an intense red by the addition of nitric acid. The drug is eliminated by the kidneys. In a communication to the Medical Society of Berlin, **P. Guttman** told of its antipyretic properties in 20 cases:—Typhoid fever, 6; pneumonia, 5; erysipelas of the face, 2; scarlatina, 2; phthisis, 2; septicæmia, 1; otitis, 1; and gangrene of the scrotum, 1. Given in gramme doses every hour for four hours, tolpyrin gradually reduces the temperature for the succeeding five or six hours. The

fall of temperature is accompanied by sweating and a lessening of the number of the pulsations. Tolypyrin is more powerful as an antipyretic than antipyrin, in the proportion of 4 to 6. As an anti-rheumatic remedy, in 15-grain doses every three hours, it is said to be superior to all other remedies, cutting short acute rheumatism, and quickly relieving the pains of the articular forms of the disease. Cephalalgia yields more readily to it than to antipyrin. The only drawback to the use of the new remedy is the occasional occurrence of vomiting. (*Les Nouveaux Remèdes*, No. 9.—*Dublin Journal Med. Sci.*, 1893.)

LOCAL REMEDIES.

Alumnol is the aluminium salt of naphthol-sulphonic acid, which contains 15 per cent. of sulphur. **Chotzen** (*Berl. klin. Woch.*, No. 48, 1892) has investigated its therapeutic action. It is a fine white powder, very soluble in water, in glycerine, and in warm alcohol. It is insoluble in ether. **Heinz** and **Liebrecht** have already reported on its physiological action, and have shown it to be a harmless, odourless, and antiseptic astringent. The author has used it in more than 300 cases. It was found curative when applied pure to soft chancres and abscesses mixed in the proportion of 10 to 20 per cent.; with inert powders in balanitis, erosions, moist eczemas, etc. One to 5 per cent. solutions were used in moist and papular eczemas, acne of the face, boils, and urethritis. Two and a half to 10 per cent. solution in alcohol was used for the treatment of eczema, urticaria, sycosis, favus, psoriasis of the head and face; and 2½, 5, 10, and 20 per cent. lanolin ointment for eczema, seborrhœa capitis, psoriasis, and favus. Alumnol varnishes were used in papular and squamous eczemas.

Gallanol is the anilide of gallic acid, and is prepared by boiling tannic or gallic acid with anilin. It forms colourless crystals with a bitter taste, sparingly soluble in cold water, readily soluble in boiling water and in alcohol. It has reducing and anti-fermentative properties, and **Cazeneuve** and **Rollet** recommend it as a non-toxic substitute for chrysarobin and pyrogallol in the treatment of psoriasis and eczema. Since it does not irritate, and does not discolour the skin, it may be safely used upon the face, head, and neck.

Forms of administration:—As ointment, in proportion of 0·5—3 parts in 30; or in traumaticin solution. (*Ther. Monatsh.*, Sept., 1893.)

Scopolamine is an alkaloid which occurs in the root of *Scopolia atropoides* and other Solanaceæ, and is isomeric with

cocaine. According to **Schmidt** the hyoscine of commerce is really scopolamine. **Rählmann** recommends it as a valuable mydriatic, superior to atropine in activity, and less liable to cause inconvenience. It may be used in solution, 1 to 2 parts per 1,000 ($\frac{1}{10}$ to $\frac{1}{5}$ per cent.). (*Ther. Monatsh.*, May, 1893.)

Illig's observations confirm those of **Rählmann**, and he points out that scopolamine is especially serviceable in those cases of inflammatory mischief in the eye where atropine is contra-indicated. (*Ther. Monatsh.*, Oct., 1893.)

Diuretin is an unstable compound and an expensive one, and although still sometimes prescribed, it does not appear to bear out the favourable results at first claimed for it. It seems to act best in dropsy due to valvular disease of the heart, and has succeeded where digitalis failed. (**Aldabelle**, **Herrick**, *Journ. Amer. Med. Assoc.*)

Caffeine-sulphonic acid, a cheaper competitor of diuretin, has been introduced by **Heinz** and **Liebrecht**. It is said to be a specific stimulant to the renal epithelium, and to be without effect upon the blood-pressure. The average dose is from 4 to 6 grammes per day of the sodium, strontium, or lithium salt. (*Ther. Monatsh.*, Oct., 1893.)

Dermatol has not supplanted iodoform, but finds its use as a desiccating and healing powder. **Shan'vsky** finds it very satisfactory in purulent otitis. (*Brit. Med. Journal* [Epitome], Dec. 31, 1892.)

Emol is a soft impalpable powder—a kind of improved Fuller's earth, and is recommended by **W. Allan Jamieson**. (*Brit. Med. Journal*, Aug. 26, 1893.)

Euophen ("Year-Book," 1893, p. 456)—one of the most effective substitutes for iodoform—has been largely used in throat and nose affections, in spreading ulcers, and in soft sores. Like iodoform, its germicidal power is feeble. (**Christman**, *Centralbl. f. Bakter. u. Parasit.*)

Ichthyol and **Thiol**.—Thiol, which is a sort of artificial ichthyol devoid of unpleasant smell, has been favourably reported on by several writers during the past year, and is mainly employed in gynecology and dermatology. **Radcliffe Crocker** prefers it to ichthyol. It is unirritating, and the stains produced upon linen are easily removed. (*Cf.* "Year-Book," 1891, p. 400.)

The literature of ichthyol is still abundant, and a few references may be noted. In gynecology, **H. Schultz**, of Budapest, thinks very highly of ichthyol as a means of promoting absorption of inflammatory products and diminishing pain. He employs it

mixed with glycerine (10 to 15 per cent.), or in ointment, with vaseline or lanolin (10 per cent.). (*Orvosi hetilap.*, 1892.)

Polacco (*Internat. klin. Rundschau*, 1892), of Milan, is enthusiastic in its favour. After an experience of nearly 1,000 cases he considers ichthyol one of the most important gains to gynecological therapeutics. He uses tampons of 10 per cent. ichthyol-glycerine. **Ullmann** (*Arztl. Centr.*, Aug., 1893) extols ichthyol as an excellent absorbent and analgesic in affections of the skin and genital tract. **Dockrell** (*Med. Press and Circ.*, 1892) considers ichthyol to be of the greatest value in all inflammations of the skin.

Many authors (**Neisser**, **Ehrmann**, **Jádassohn**, **Manganotti**) testify to its value (1 per cent. solution) in the treatment of gonorrhœa.

HYPNOTICS.

Nothing very striking in this sphere of action has been published.

Sulphonal holds its own firmly, and has lost few of its enthusiastic advocates. In most asylums for the insane it is now largely in use, and appears to be of special value in acute melancholia. It is folly to claim, as some feel disposed to do, that it is void of disagreeable results. One can hardly fail noticing untoward effects, especially in cases where much physical prostration is present. It has been stated that it is looked upon with such suspicion in Turkey that it has been interdicted throughout the Empire by Imperial decree.

Surely caution should still be studiously observed in its use, and the more so as its more frequent employment would tend naturally to render us quite oblivious to its drawbacks and peculiarities. Fatal cases are still being reported, but they are not by any means in proportion to the increased number of successful ones. (**Squibb**, *Ephemeris*.)

After the exhibition of sulphonal, a red pigment, hæmatoporphyrin, sometimes appears in the urine. This is a threatening symptom. (**Quincke**, **Schäffer**, *Ther. Monatsh.*, June, 1893.)

Gonzales advocates the use of sulphonal in conjunction with morphine as a safe and very efficient combination (*Brit. Med. Journal* [Epitome], Sept. 2, 1893). **Kast** (*Arch. f. exp. Path. u. Pharm.*, 31, i., 1893), from a study of the published cases in which poisonous effects have followed the use of sulphonal for a prolonged period, gives the following as characteristics of the condition of chronic poisoning by the drug: (1) Disturbances of digestion, as vomiting, diarrhœa, or constipation; (2) of the

nervous system, as ataxy and feebleness of the limbs, often share in the pathological process; (2) the most frequent accompaniment is muscular wasting, without disturbance of sensation or reflex action, and without the reaction of degeneration; (3) the atrophy and paralysis are not in relation to the duration or extent of the arthritic affection; (4) less frequently the atrophy is the result of an involvement of the nerves; (5) a quite satisfactory explanation cannot yet be given of this atrophy, but several factors may produce it; and (6) the prognosis is good, electrical and mechanical treatment being very useful, whereas anti-rheumatic remedies are without effect. (*Brit. Med. Journal* [Epitome], Feb. 11, 1893.)

Trional and **Tetronal** are so called because they contain in their molecules respectively three and four ethyl groups. Common sulphonal contains only two ethyl groups, and might therefore be fitly called dional. They are all members of the organic class termed sulphones, and include the radical SO_2 (*cf.* "Year-Book," 1891 and 1893). See "Diseases of Nervous System," p. 78.

Chloralamide (Chloral Formamide) continues to be used in about the same line of affections as a year ago, but its employment has become more general. Its purely hypnotic effects are still pronounced, and well recognised in the same class of cases as before noted. Its more extended use shows that it has a much larger range of usefulness than its rivals, chloral, paraldehyde or sulphonal. Its marked characteristics, which are being more recognised and taken advantage of every day—first, of not requiring an increased dose after continued use; and second, of definitely establishing the *habit* of sleeping by its systematic use, so that the habit is well kept up after administration has been discontinued—are inestimable qualifications.

During the past year it has been found especially valuable in cardiac asthma, and renewed claims for its superiority in seasickness have been prominent, although not by any means conclusive.

It is true that there have been some disappointing results reported this year, as well as last, but they are comparatively few, and we may very safely say in general that in chloralamide we continue to have a safe and reasonably reliable hypnotic. (*Squibb, Ephemeris.*)

Chloralose ($\text{C}_8\text{H}_{11}\text{ClO}_6$), a new hypnotic, seems worthy of being carefully tested. The smallness of the dose—*viz.*, *three or four grains*—as a hypnotic is remarkable. It is given in water, capsules, or in pills. In water its taste is readily masked by peppermint. See "Diseases of Nervous System," p. 74.

Euphorin—*i.e.*, phenyl-urethane—has been reported upon by a number of writers. **G. Cao** (*Rif. Med.*, Nov. 18, 19, and 21, 1892) has collected the results obtained by various observers with euphorin, and has added some observed by himself. He thinks euphorin is destined to play an important part in therapeutics by its efficacy in a great variety of conditions, from its rapid action, and its freedom from unpleasant after-effects. It is recommended: (1) As an antifermentative and parasiticide more energetic than phenol (Giacosa, Belfanti, Curti). (2) As an antithermic, in which respect its action is more rapid and greater than that of antipyrin (Sansoni, Adler, Lépine, Oliva, Curti). (3) As a neuralgesic and analgesic: (*a*) in habitual hemicrania (Lépine, Adler, Stillé, Curti, Cao); (*b*) in supra-orbital neuralgia, sciatica, intercostal neuralgia, etc. (Adler, Sansoni); (*c*) in syphilitic pains of the limbs (Cao); (*d*) in orchitis, etc. (4) In both acute and chronic rheumatism, being in some cases superior to the salicylates (Sansoni, Adler, Cao). (5) As a substitute for iodoform in major as well as in minor surgery, being equally efficient, really antiseptic, and less toxic (Peroni, Bovero, Oliva, Bossi, Curti). (6) As a disinfectant and cicatrising agent, in bedsores, scalds, and other wounds. (7) In the various forms of herpes, as an anodyne and healing agent. (8) In aphthous stomatitis. (9) In the treatment of venereal ulcers it is far preferable to iodoform, iodol, aristol, salicylic acid, resorcin, or chloral hydrate (Peroni, Bovero). (10) In various skin affections, especially those of parasitic origin, such as tinea, trichophyton, favus, etc.

Hypnal was referred to in the "Year-Books" for 1891 and 1892. It is a compound obtained by the mutual reaction of chloral and antipyrin. Further researches have shown that there are *several* combinations of chloral and antipyrin, one at least of which is physiologically inactive. Hence it happens that different preparations bearing the name hypnal were in the market, and therapeutical observation was thus seriously handicapped.

Herz has investigated the action of Filehne's hypnal, and finds it to be an efficient hypnotic. It usually acts within twenty to thirty minutes, and has the advantage of being *almost tasteless*. The dose for adults is from 1--3 grammes. It is easily prescribed as a 10 per cent. watery solution, along with some cordial, syrup or tincture. (*Ther. Monatsh.*, März, 1893.)

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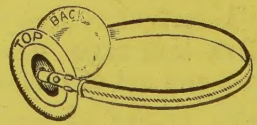
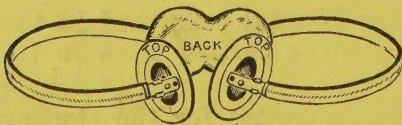
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